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NC DENR
Division of Waste Management - Solid Waste

# Environmental Monitoring Reporting Form

**Notice:** This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

## Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

## Solid Waste Monitoring Data Submittal Information

**Name of entity submitting data (laboratory, consultant, facility owner):**

Green Meadows - Charah, Inc.

**Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:**

Name: Michael Plummer, P.E. Phone: 704-338-6843

E-mail: Michael.Plummer@hdrinc.com

| Facility name: | Facility Address: | Facility Permit # | NC Landfill Rule: (.0500 or .1600) | Actual sampling dates (e.g., October 20-24, 2006) |
|---|---|---|---|---|
| Brickhaven No. 2 Mine Tract "A" | 1271 Moncure-Flatwood Road<br>Chatham County<br>Moncure, North Carolina | 1910-STRUCT-2015 | CAMA | February 16-18, 2016 |

**Environmental Status: (Check all that apply)**

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

**Type of data submitted: (Check all that apply)**

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☒ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

**Notification attached?**

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

## Certification

**To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.**

Michael Plummer, P.E. | Project Manager | 704-338-6843

Facility Representative Name (Print) | Title | (Area Code) Telephone Number

05/26/2016

Signature | Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA PROFESSIONAL SEAL 025495 ENGINEER MICHAEL D. PLUMMER 5/26/16

HDR Engineering, Inc. of the Carolinas; 440 S. Church St. Suite 1000; Charlotte, NC 28202

Facility Representative Address

F0116

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009

# First Semi-Annual 2016 Groundwater, Surface Water and Leachate Monitoring Report

## Brickhaven No.2 Mine Tract “A” Structural Fill

Charah, Inc.

*Moncure, Chatham County, North Carolina*

May 26, 2016

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## List of Acronyms

| | |
|---|---|
| µg/L | micrograms per liter |
| asl | above sea level |
| CAMA | North Carolina Coal Ash Management Act of 2014 |
| CCP | Coal Combustion Products |
| EPA | United States Environmental Protection Agency |
| ft/ft | feet / foot |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality |
| NCGPS | North Carolina groundwater protection standard |
| NTU | Nephelometric turbidity units |
| msl | mean sea level |
| PVC | polyvinyl chloride |
| TDS | total dissolved solids |
| USGS | U.S. Geological Survey |

# 1 Introduction

## 1.1 Purpose

This *First Semi-Annual 2016 Groundwater, Surface Water and Leachate Monitoring Report* addresses results from the 4th, 5th, and 6th events of the eight required sampling events at the Brickhaven No.2 Mine Tract "A" Structural Fill site in Moncure, Chatham County, North Carolina.

Groundwater monitoring and sampling prior to, during, and post-disposal of coal combustion products (CCPs) into the previously clay mined pits of the site shall be conducted in accordance with the following:

- Coal Ash Management Act (CAMA) of 2014 (Senate Bill 729, ratified by North Carolina General Assembly)
- Water Quality Monitoring Plan Brickhaven No.2 Mine Tract "A" Structural Fill, approved March 2015.
- North Carolina Department of Environmental Quality (NCDEQ)[1]Permit No. 1910-STRUC-2015, issued June 5, 2015.
- NCDEQ Solid Waste Section Guidelines for Groundwater, Soil, and Surface Water Sampling, April 2008.
- NCDEQ Division of Water Management memorandum concerning electronic document submittal for routine groundwater and surface water monitoring, November 5, 2014.
- U.S. Environmental Protection Agency (EPA) Region I, *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells*, January 19, 2010.

Per the approved permits and water quality monitoring plan, a minimum of eight groundwater monitoring events will be conducted at site over the course of one year, concluding on or about August 2016. A minimum of one independent background sample prior to placement of ash was specified in the permit to construct/operate.

The first sampling event occurred on August 12, 2015 and was addressed in detail in the *Initial Background Groundwater and Surface Water Monitoring Event Report* prepared by Buxton Environmental, Inc. (Buxton) on October 28, 2015. The 2nd and 3rd sampling events commenced on October 15, 2015 and November 18, 2015, respectively; these sampling events were addressed in detail in the *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report* prepared by HDR Engineering of the Carolinas, Inc. (HDR) on December 31, 2015. The 1st and 2nd sampling events occurred prior to the placement of ash on October 23, 2015 and represent pre-existing site conditions. The 4th, 5th, and 6th sampling events commenced on January 4, February 16, and April 5, 2016, respectively. The results of the 4th, 5th, and 6th sampling events are described herein.

[1] Prior to September 18, 2015, the NCDEQ was referred to as the North Carolina Department of Environment and Natural Resources (NCDENR). Both naming conventions are used in this report, as appropriate.

## 1.2 Regulatory Background

CAMA Section §130A-309.216 requires implementation of a groundwater monitoring system as described in the requirements as follows:

***"§ 130A-309.216. Design, construction, and siting requirements for projects using coal combustion products for structural fill.***

*(b) Liners, Leachate Collection System, Cap, and Groundwater Monitoring System Required for Large Structural Fills. –*

*(4) A groundwater monitoring system, that shall be approved by the Department and, at a minimum, consists of all of the following:*

*a. A sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the relevant point of compliance as approved by the Department. A down-gradient monitoring system shall be installed at the relevant point of compliance so as to ensure detection of groundwater contamination in the uppermost aquifer.*

*b. A proposed monitoring plan, which shall be certified by a licensed geologist or professional engineer to be effective in providing early detection of any release of hazardous constituents from any point in a structural fill or leachate surface impoundment to the uppermost aquifer, so as to be protective of public health, safety, and welfare; the environment; and natural resources.*

*c. A groundwater monitoring program, which shall include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of groundwater quality at the background and down-gradient wells. Monitoring shall be conducted through construction and the post-closure care period. The sampling procedures and frequency shall be protective of public health, safety, and welfare; the environment; and natural resources.*

*d. A detection monitoring program for all Appendix I constituents. For purposes of this subdivision, the term "Appendix I" means Appendix I to 40 C.F.R. Part 258, "Appendix I Constituents for Detection Monitoring," including subsequent amendments and editions.*

*e. An assessment monitoring program and corrective action plan if one or more of the constituents listed in Appendix I is detected in exceedance of a groundwater protection standard."*

On April 17, 2015, EPA published its final rule *Disposal of Coal Combustion Residuals from Electric Utilities* to regulate the disposal of CCP as solid waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA). Among other requirements, the final rule established requirements for a groundwater monitoring program consisting of detection monitoring and, if necessary, assessment monitoring and corrective action. EPA selected constituents for

detection monitoring that are present in CCP, would be expected to migrate rapidly, and would thereby provide early detection as to whether contaminants were migrating from the disposal unit (80 FR 74: 21397).

As stated in the Federal Register (80 FR 74: 21342)

> *These detection monitoring constituents or inorganic indicator parameters are: boron, calcium, chloride, fluoride, pH, sulfate and total dissolved solids (TDS). These inorganic indicator parameters are known to be leading indicators of releases of contaminants associated with CCR and the Agency strongly recommends that State Directors add these constituents to the list of indicator parameters to be monitored during detection monitoring of groundwater if and when a MSWLF decides to accept CCR.*

Groundwater analytical results for the constituents in 40 CFR 257, Appendix III detection monitoring and 40 CFR 257, Appendix IV assessment monitoring are included below.

Constituents for detection monitoring listed in 40 CFR 257 Appendix III are:

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total dissolved solids (TDS)

Constituents for assessment monitoring listed in 40 CFR 257 Appendix IV includes:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Aluminum, copper, iron, manganese, and sulfide were included in the Appendix IV constituents in the draft rule; EPA removed these constituents in the final rule. Therefore, these constituents are not included.

### 1.2.1 Site Specific Regulatory Background

In accordance with CAMA, the *Water Quality Monitoring Plan* (Buxton, 2015a) for the site was designed to effectively provide early detection of any release, as to be protective of human health and the environment. The *Design Hydrogeologic Report* (HDR, 2014*)* specified a groundwater monitoring network would comprise of seven downgradient/side-gradient monitoring wells and one upgradient background monitoring well. Four pre-existing piezometers (PZM-1, PZM-22, PZM-27, and PZM-28) were to be converted to monitoring wells (MW-4, MW-5, MW-7, and MW-8, respectively); PZM-28 remained dry during investigations and was unable to be utilized for monitoring well MW-8 as originally specified. PZM-28 was subsequently abandoned in accordance with North Carolina standards and its abandonment was documented in the *Report of Abandonment of Piezometer PZM-28,* submitted to NCDEQ on October 5, 2015. Therefore, only MW-4, MW-5, and MW-7 were successfully converted to monitoring wells during the August through December 2015 time period (**Table 1**).

Four downgradient/side-gradient compliance monitoring wells (MW-2, MW-3, MW-6, and MW-8 replacement) and one upgradient background monitoring well (MW-1) were installed from June 19 through July 30, 2015. On July 17, 2015, Mr. Ross Klingman, P.G. with Buxton, contacted Ms. Elizabeth Werner, Permitting Hydrogeologist with NCDEQ SWS, via telephone to request the installation of an additional background monitoring well (BG-1). The additional background well would assist with current background and future semi-annual groundwater quality monitoring at the site. During the conversation, Ms. Werner verbally approved the installation of the additional background monitoring well (Buxton, 2015b).

## 1.3 Site Location, Operation and Background

The site is located in Chatham County, approximately four miles southwest of central Moncure, North Carolina (**Figure 1**). The owner of the site is Green Meadow, LLC (Green Meadow) and Charah, Inc. (Charah) is responsible for the operation and maintenance of the site. The mine property is approximately 301 acres in total; the structural fill area for CCP placement will comprise of approximately 145 acres; and the fill area including associated perimeter berms, channels, and haul roads encompasses 166 acres. The remaining acreage is still utilized for clay mining activities.

The property located within the structural fill area was previously owned by General Shale Brick, Inc., which operated the site as a clay mine since 1985 for their off-site brick manufacturing facility. Mined clay was stockpiled and then transported approximately 3.5 miles south to Brickhaven, North Carolina for brick manufacturing.

The area immediately surrounding the site primarily consists of rural residential (approximately 2,500 feet east, 1,000 feet southeast and 1,000 feet southwest), commercial, industrial, wooded and agricultural property. According to information obtained from the Chatham County GIS website, municipal water supply is available to the surrounding area.

Charah began CCP placement in the first composite liner containment system (Cell 1, Subcell 1A) on October 23, 2015. Charah plans to place approximately 1,600,000 tons of CCP per year in the 12,000,000 ton structural fill capacity; therefore, the placement phase should last approximately eight years or less depending of importation rate. CCPs (including fly ash, bottom ash, boiler slag, and/or flue gas desulfurization materials) are brought to the site by truck, rail, or combination thereof, from the Duke Energy Carolinas (DEC) Riverbend Steam Station and Duke Energy Progress (DEP) L.V. Sutton Energy Complex (Sutton Plant) sites. CCPs could eventually be brought to the site from other DEC and/or DEP sites.

Leachate (i.e. product generated from the liquids present in the fill at the time of placement and/or stormwater that infiltrates the fill) is managed on-site through collection, storage, and disposal of the resultant liquid. Green Meadow LLC has an approved pump and haul permit to dispose of leachate at either the City of Sanford's Big Buffalo Creek Wastewater Treatment Plant or to VLS Recovery Services LLC in Mauldin, South Carolina. In addition to the first leachate sample initially collected during the 3rd Round Sampling Event (HDR, 2015), leachate samples were subsequently collected during the 4th through 6th sampling events; analytical leachate results are discussed in **Section 3.3**.

## 1.4 Site Topography and Geographical Setting

According to the 1993 USGS topographic quadrangle (**Figure 2**), the topography of the site and immediately surrounding area can be characterized by moderately rolling hills, which are dissected by dendritic creeks. The northwestern portion of the site generally slopes to the north and northwest from three topographically high ridges with interconnected saddles ranging from approximately 260 to 270 feet above sea level (asl), towards off-site intermittent tributary. The southeastern portion of the site generally slopes to the southeast, south and west from the three topographic high ridges with similar interconnected saddles ranging from approximately 260 to 270 feet asl, towards on-site intermittent tributary creeks that drain from the southern property boundary at approximately 205 feet asl.

## 1.5 Geologic and Hydrogeologic Setting

### 1.5.1 Regional Geology

The site is located within the Piedmont physiographical province of North Carolina, which is a northeast-southwest trending region extending from New York to Alabama.

According to the 1985 North Carolina Geologic Map prepared by the North Carolina Geological Survey, the site is located in the Triassic Basin Belt of the Piedmont physiographic province. The basement rocks of the Triassic Basin Belt include conglomerate, sandstone, mudstone, limestone, coal, and shale. The majority of the subject property is located within the Sanford Formation which contains conglomerate, fanglomerate, sandstone, and mudstone. The far western portion of the site is located in the Cummock Formation which contains sandstone, mudstone, gray and black coal, and carbonaceous shale. The Triassic Basin is bounded by felsic metavolcanic rock within the Carolina Slate Belt approximately 6.5 miles to the northwest; and is contacted by metamorphosed granite and by biotite gneiss and schist of the Raleigh Belt along a normal fault approximately 2.5 miles to the southeast. The Triassic Basin formations

have been intruded by north northwest-south southeast trending igneous diabase dikes during the Jurassic Period (~144 to 208 Ma), and contain northeast-southwest trending normal faults, however, none of these were indicated to exist at the subject site on the 1985 geologic map (NCDENR, 1985).

In the Piedmont, the bedrock is typically overlain by a mantle of weathered rock (residuum/saprolite), which has an average thickness of approximately 25 feet. The residuum/saprolite consists of varying amounts of unconsolidated clays, silts and sands, with lesser amounts of rock fragments. Due to the range of the parent rock composition and the variable susceptibility to weathering of each rock type, the residuum/saprolite ranges widely in color, texture and thickness. Generally, the residuum/saprolite is thickest near inter-stream divides (ridges) and thins toward stream beds. In profile, the residuum/saprolite normally grades from clayey soils near the land surface to sandier, partially weathered rock above the competent bedrock (Buxton, 2014).

### 1.5.2 Regional Hydrogeology

The occurrence and movement of groundwater in the Piedmont physiographic province is within two separate but interconnected water-bearing zones that typically comprise one aquifer. A shallow water-bearing zone occurs within the residuum/saprolite and a deeper zone within the underlying bedrock.

Groundwater in the residuum/saprolite zone occurs in the interstitial pore spaces between the individual grains comprising the residuum/saprolite. Groundwater in this zone is typically under water table conditions and generally flows from topographic highs to topographic lows. The occurrence and movement of groundwater in the underlying bedrock zone is controlled by joints and fractures within the bedrock. Groundwater within this deeper zone may occur under confined or semi-confined conditions, depending on the extent of fracturing at the saprolite/bedrock interface. Deeper groundwater movement is typically controlled by the distribution of openings in the bedrock and can be variable.

No naturally occurring springs or creeks with actively flowing water recharged by the subsurface aquifer were observed within the site boundary during this reporting period.

# 2 Sampling Procedures

## 2.1 Groundwater Sampling Procedures

A total of eight monitoring wells, one background monitoring well, and two surface water samples were collected on three separate occasions in 2015 and three separate occasions in the first half of 2016, to date (**Figure 3**). Two remaining sampling events will be conducted prior to August 2016 in compliance of the site's Water Quality Monitoring Plan. The 1$^{st}$ and 2$^{nd}$ monitoring events (August 12, 2015 and October 15, 2015 respectively) occurred prior to the placement of ash at the site on October 23, 2015 and therefore constitute pre-existing site conditions. The 3$^{rd}$ monitoring event (November 18, 2015) occurred after the placement of CCP. A single leachate sample was collected during each of the 3$^{rd}$ through 6$^{th}$ monitoring events. The 1$^{st}$ monitoring event was conducted by Buxton; the 2$^{nd}$ through 6$^{th}$ monitoring events were

conducted by Pace Analytical Services, Inc. Field data sheets and sampling logs along with the analytical laboratory results for the 4th through 6th monitoring events are provided in **Appendices A, B, and C**. Analytical laboratory results for the first through 3rd monitoring events were included under separate cover in the *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report* (HDR, 2015).

Prior to commencing groundwater sampling, new plastic sheeting was placed around the well head, in order to prevent the sampling equipment from contacting the ground surface. The well lock was then removed from the protective stand-up-cover. New nitrile gloves were donned and static groundwater levels were obtained from below the measuring point (top-of-well polyvinyl chloride (PVC) casing) at each monitoring well to the nearest 0.01 foot with a depth-to-water electrode at each monitoring well. Low flow purging and sampling was conducted utilizing a stainless-steel Proactive SS Mega Monsoon pump with flow rate controller, which was plumbed to new polyethylene sample tubing (1/2-inch outer diameter (OD) 3/8-inch inner diameter (ID)). In the event of low recharge a peristaltic pump was utilized to purge and sample the well. The base of the pump was set at approximately two feet off the bottom depth above the well base to reduce turbidity. The following information was recorded at timed intervals during the purging process: 1) water levels (below top of casing), 2) purge flow rate, 3) purge rate and cumulative water pumped, and 4) field parameters. Temperature, conductivity, pH, oxygen reduction potential (ORP), and dissolved oxygen (DO) were recorded with a Horiba U-52 meter; and turbidity was recorded with a Micro-TPW meter. The Horiba U-52 and Micro-TPW meters were rented and calibrated by Enviro-Equipment, Inc. of Pineville, North Carolina for the first monitoring event. Horiba U-52 and Micro-TPW/LaMotte turbidity meters, property of Pace Analytical, were calibrated prior to use and on-site during the sampling events.

Purging was conducted until a minimum of three well volumes of water had been removed and the below field parameters requirements have been met and stabilized. All measurements, except turbidity, were obtained using a flow-through-cell, while turbidity measurements are obtained before water enters the flow-through-cell.

- Turbidity (10% for values greater than 5 NTU (if three turbidity values are less than 5 NTU, the values are considered stabilized)
- DO (10% for values greater than 0.5 mg/L, if three DO values are less than 0.5 mg/L, the values are considered stabilized)
- Specific conductance (3%)
- Temperature (3%)
- pH ($\pm$ 0.1 unit)
- ORP ($\pm$ 10 millivolts)

If field parameters had stabilized prior to purging three well volumes, or the well was going dry, groundwater samples were then collected. The water level meter and low flow pump were decontaminated in the field with a distilled water rinse, Alconox® wash, and a distilled water rinse, prior to and following sampling at each monitoring well. Following sampling, locks were

placed back on the well stand-up covers. Purge water was discharged to the ground surface at respective well heads.

All samples for this current reporting period were shipped under proper management and Chain of Custody (COC) procedures to Pace Analytical Services, Inc. laboratory in Huntersville, North Carolina (Cert IDs #37706 and #5342). Sample handling and custody was performed according to the EPA Guidance for Field Samplers.

## 2.2 Surface Water Sampling Procedures

Surface water samples were collected from two locations outside of the structural fill boundary to provide for potential groundwater to surface water interactions and evaluation of potential off-site impacts. The SW-1 sampling location is downgradient of the site, approximately 3,000 feet south of the structural fill boundary along an unnamed tributary of Gulf Creek. The SW-2 sampling location is upgradient of the site, approximately 3,200 feet west of the structural fill boundary along Shaddox Creek. Approximate surface water sampling locations are depicted on **Figure 4**.

New nitrile gloves were donned prior to collecting surface water samples. Field parameters (including temperature, conductivity, pH, ORP, and DO) were recorded with a Horiba U-52 meter; turbidity was recorded with a Micro-TPW meter.

Gulf Creek and Shaddox Creek are classified as Class WS-IV Waters by NCDEQ and as such are evaluated under North Carolina Surface Water and Wetland Standards (15A NCAC 02B).

# 3 Results

Groundwater analytical results for the constituents in 40 CFR 257 Appendix III detection monitoring and 40 CFR 257 Appendix IV assessment monitoring (as previously discussed in **Section 1.2**) were compared to background concentrations to determine if any impact to groundwater is indicated. If any impact to groundwater is inferred from groundwater detection monitoring or if a potential impact is detected, Charah must notify NCDEQ of any exceedance(s) within 14 days. In the event no exceedances are observed, Charah must submit a report of the sampling results to NCDEQ with 120 days of the sampling event.

Groundwater samples were also analyzed for constituents of assessment monitoring (EPA 40 CFR 257 Appendix IV). Assessment monitoring typically occurs if a statistically significant increase in a detection monitoring constituent is noted and will be further assessed in subsequent reporting. Appendix IV constituents were analyzed for background events and will continue to be assessed during future monitoring events. Groundwater monitoring samples were also analyzed for 40 CFR Part 258 Appendix I metals and volatile organic compounds (VOCs). Iron and manganese, two constituents often attributable to weathering of Piedmont parent material, were not analyzed during testing.

A summary of the laboratory parameters detected during the 4th through 6th monitoring events, along with the highest detected concentration result, is provided in the sections below. Field and Sampling Logs are provided in **Appendix A**. Full laboratory data from the 4th through 6th

monitoring events is provided in **Appendix B** and electronic data deliverables (EDDs) in **Appendix C**.

## 3.1 Groundwater Analytical Results

### 3.1.1 Background Site Conditions Summary

Pre-CCP Placement groundwater site conditions (i.e. laboratory analysis from the first and second monitoring events) generally exhibited high background chloride and TDS concentrations. Several monitoring wells additionally showed exceedances of NC 2L Standards for antimony, barium, chromium, cobalt, copper, and vanadium.

Bromodichloromethane and dibromochloromethane detected above NCGPS in groundwater samples from MW-2, MW-3, and MW-7 during the first monitoring event were the result of municipal water utilized during previous development activities. These trihalomethanes were only detected in the first sampling event; all VOCs were non-detect for the second through 6th sampling events. VOCs are not present at naturally occurring background concentrations at the site.

A detailed discussion of background groundwater conditions can be found in the *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report* (HDR, 2015).

### 3.1.2 Conditions Following CCP Placement

CCP placement began at the site on October 23, 2015; four monitoring events (3rd through 6th rounds) have been conducted following CCP placement. The 3rd monitoring event was discussed in detail in the *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report* (HDR, 2015); the primary focus of this section is the analytical results of Rounds 4 through 6.

The eight monitoring wells and single background monitoring well continue to show consistently elevated chloride and TDS which was also observed in pre-CCP placement (Rounds 1 and 2) and immediately following CCP placement (3$^{rd}$ Round). In Rounds 4 through 6, antimony, arsenic, barium, chromium, thallium, vanadium and pH additionally showed several intermittent exceedances that were similarly noted in both pre-CCP placement monitoring events (Rounds 1 and 2). Naturally occurring metals exceeding NCGPS are common in North Carolina due to various geologic conditions (i.e. weathering of crystalline parent material). pH levels were detected below NCGPS in MW-4 (6.33 to 6.40 SU) for all six monitoring events and appear to be the result of naturally occurring conditions.

Ranges of constituent concentrations for Rounds 3 through Round 6 are given below. The monitoring well location of the highest concentration and the sampling event in which the concentration was detected for a given constituent is provided in parentheses. Data packages are included in **Appendix B** with EDDs in **Appendix C**. A summary of the findings from the 4th through 6$^{th}$ monitoring events is provided below and in **Table 6-1** through **Table 6-3**:

**EPA Appendix III Constituent Detections (Post-CCP Placement Site Conditions)**

- Boron: 5.5 to 49.4 µg/L (MW-7 – 3$^{rd}$ Round)

- Calcium: 10,100 to 207,000 µg/L (MW-2 – 5th Round)
- Chloride: 18,000 to 1,280,000 µg/L (MW-3 – 5th Round)
- Fluoride: <20 to 590 µg/L (MW-5 – 3rd Round)
- pH: 6.30 to 7.95 SU
- Sulfate: 3,100 to 247,000 µg/L (MW-2 – 5th Round)
- Total Dissolved Solids: 194,000 to 2,700,000 µg/L (MW-2 – 6th Round)

**EPA Appendix IV Constituent Detections (Post-CCP Placement Site Conditions)**

- Antimony: <3.8 to 10.8 µg/L (MW-3 – 5th Round)
- Arsenic: <2.50 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Barium: 86 to 1,550 µg/L (MW-8 – 3rd Round)
- Beryllium: <0.5 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Cadmium: <0.5 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Chromium: <2.50 µg/L to 23.7 µg/L (MW-2 – 5th Round)
- Cobalt: <2.50 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Lead: <2.50 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Lithium: 6.3 µg/L to 217 µg/L (MW-3 – 6th Round)
- Mercury: <0.10 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Molybdenum: <2.50 µg/L to 21.1 µg/L (MW-2 – 3rd Round)
- Selenium: <5.0 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Thallium: <5.0 µg/L to 14.8 µg/L (MW-5 – 5th Round)
- Radium-226: 0.0638J to 1.16 pCi/L (MW-8 – 3rd Round)
- Radium-228: 0.174J to 1.95J pCi/L (MW-3 – 3rd Round)

**EPA Appendix I Metal Detections (Post-CCP Placement Site Conditions)**

- Copper: <2.5 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Nickel: <2.5 µg/L to 13.5 (MW-2 – 5th Round)
- Silver: <2.5 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Vanadium: <2.5 µg/L to 6.2 µg/L (MW-1 – 4th Round)
- Zinc: <5.0 µg/L to 50.7 (MW-2 – 3rd Round)

**EPA Appendix I VOC Detections (Post-CCP Placement Site Conditions)**

- 1,4-Dichlorobenzene: <0.33 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Acetone: <10.0 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Bromodichloromethane: <0.18 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Bromoform: <0.26 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Carbon Disulfide: <1.20 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Chloroform: <0.14 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Dibromochloromethane: <0.21 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds
- Dibromomethane: <0.21 µg/L in all wells for 3rd, 4th, 5th, and 6th Rounds

Laboratory analytical results from the 3rd Round generally showed a decrease or remained constant in groundwater TDS concentrations in all monitoring wells. TDS concentrations increased for the three subsequent sampling events (4th, 5th and 6th Rounds) and returned to levels similarly observed during pre-CCP placement (1st and 2nd Rounds) Kevin Godwin, Project Manager of Pace Analytical, verified the 3rd Round sampling, analytical, and quality control procedures were performed in accordance with all other monitoring events.

Elevated thallium concentrations were detected during the 4th and 5th Rounds, relative to the four other monitoring events. Exceedances were detected in MW-6 and MW-7 during the 4th Round and in BG-1, MW-2, MW-5, and MW-8 in the 5th Round. Thallium was non-detect for all monitoring wells during the 6th Round.

Radium-226 and Radium-228 were detected in all wells during the 3rd Round of sampling, but were estimated at concentrations below the laboratory minimum detection limit (MDL), and were not detected in any of the other five samplings events.

## 3.2 Surface Water Analytical Results

Surface water samples prior to and following CCP placement had few constituents above established North Carolina Surface Water and Wetland Standards (15A NCAC 02B) or EPA National Criteria standards (utilized by North Carolina Division of Water Quality as default standards for non listed parameters). Laboratory analytical results from the 4th Round of sampling indicated thallium in surface water samples SW-1 (12.9 µg/L) and SW-2 (11.4 µg/L) were in exceedance of the 15A NCAC 2B standard. No other surface water exceedances were detected during the 4th Round of sampling. Results from the 5th Round of sampling indicated cobalt (13.1 µg/L), TDS (614,000 µg/L), lead (37.3 µg/L), copper (24.5 µg/L) and zinc (91.1 µg/L) in SW-1 and thallium (13.9 µg/L) in SW-2 were in exceedence of their respective 15A NCAC 2B standards. No detections above the 15A NCAC 2B standards were observed during the 6th Round of surface water sampling.

## 3.3 Leachate Analytical Results

Leachate generated on-site was collected during the 3rd through 6th monitoring events to geochemically characterize the nature of CCP leachate (**Figure 5**). Leachate parameter concentrations are evaluated against the NC Groundwater Protection Standards. EPA Appendix III parameters generally increased from the 3rd through 6th Rounds but were within the standard. EPA Appendix IV and EPA Appendix I metals parameters remained stable or also increased slightly. Antimony, arsenic, and selenium were in exceedance during the 5th and 6th Rounds, and chromium was in exceedance for the 4th Round. Vanadium was in exceedance for the 4th through 6th Rounds.

## 3.4 Groundwater Flow Characteristics

Prior to each of 4th Round through 6th Round sampling events, a synoptic event occurred to establish depth-to-water below top of casing for the seven monitoring wells, one upgradient monitoring well, and one background monitoring well. Depths-to-water ranged from 5.8 feet below top of casing (MW-4; February 16, 2016) to 58.3 feet below top of casing (MW-1; April 5, 2016). Groundwater elevations ranged from 197.2 mean sea level (msl) (MW-2; January 4, 2016) to 230.1 msl (MW-5; January 4, 2016). Round 4 experienced the highest median groundwater elevation in 2016. The greatest groundwater elevation change observed between Round 4 through Round 6 events occurred at MW-5 (230.1 msl on January 4, 220.1 msl on April 5, 2016; an approximate 10 foot drop in three months). Due to on-site linear construction and storm water pond construction, groundwater levels have fluctuated during this reporting period.

### 3.4.1 Groundwater Direction

Groundwater generally flows toward the southeastern portion of the site, although radial flow away from two topographic high points is depicted on **Figure 6**. A potentiometric surface map for groundwater elevations measured during April 2016 event is shown in **Table 2** and on **Figure 6**.

### 3.4.2 Hydraulic Conductivity

Hydraulic conductivity is the capacity of a porous medium to transmit water (K, coefficient of permeability). This property is primarily dependent upon the size, shape, and interconnectedness of pores, and is governed secondarily by the properties of the fluid (i.e., viscosity, a temperature-dependent phenomenon). Horizontal hydraulic conductivity of aquifer materials adjacent to the well screen was estimated through in-situ slug testing. On September 10, 2015, Buxton conducted rising head slug tests at monitoring wells BG-1, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8, to determine hydraulic conductivity (Buxton, 2015b). Results are provided in **Table 3**.

Prior to conducting slug tests, static water levels were obtained at each well to the nearest one-hundredth of a foot (0.01 feet) with an electronic water level indicator. Slug tests were conducted by lowering one or two disposable PVC bailer(s) attached to new nylon rope below the water level at each well. Water levels were allowed to equilibrate to near static conditions (at least 90% recharge). A slug of water was then removed from the well by withdrawing the bailer(s) and water levels were measured with time.

The slug and recovery test data were evaluated using AQTESOLV® software developed by Hydrosolv, Inc. (2007) and in accordance with the methods developed by Bouwer and Rice in 1976 and 1987. The Bouwer-Rice method utilized to evaluate the slug test data was developed to determine the hydraulic conductivity of the aquifer immediately surrounding the screened portion of the partially or fully penetrating wells in unconfined aquifers.

Monitoring wells were generally screened within residuum or partially weathered rock; hydraulic conductivity ranged from 4.08E-07 cm/sec at MW-3 (0.422 ft/year) to 4.11E-04 at MW-1 (425.5 ft/year).

### 3.4.3 Horizontal Hydraulic Gradients

Horizontal hydraulic gradient is calculated by taking the difference in hydraulic head over the length of the flow path between two wells of similar construction; BG-1, MW-1, MW-2, MW-3, MW-6, and MW-8 were installed with 15-foot screens, while MW-4, MW-5, and MW-7 (i.e. converted piezometers) were installed with ten-foot screens. Hydraulic gradients at the site during the sixth round of sampling ranged from 0.001 between MW-1 and MW-6 to 0.013 between MW-1 and MW-2 (**Table 4**).

### 3.4.4 Groundwater Flow Velocity

Darcy's Law is an equation that describes the flow rate or flux of fluid through a porous media. To calculate the velocity that moves through a porous media, the specific discharge, or Darcy flux, is divided by the effective porosity, $P_e$. The result is the average linear velocity, or seepage velocity, of groundwater between two points.

The following equation was used to calculate groundwater velocities between specific wells:

$$V_S = \frac{Ki}{P_e}$$

Where:

$V_s$ = seepage velocity
K = horizontal hydraulic conductivity
i = horizontal hydraulic gradient
$P_e$ = effective porosity

Seepage velocities for groundwater were calculated using horizontal hydraulic gradients established in **Section 3.2.3**, horizontal hydraulic conductivity values established in **Section 3.2.2**, and estimated effective porosity values from geotechnical testing and from the literature where geotechnical data was not available. (Buxton, 2014; Sinhal and Gupta, 2010). If geotechnical data was unavailable, an effective porosity of 0.15 was used for wells primarily screened in residuum/PWR and an effective porosity of 0.075 was used for wells primarily screened in layered rock/PWR.

Flow velocity varies with hydraulic conductivity as well as hydraulic gradient and effective porosity of the soil, and therefore this approximated value varies on a well-by-well basis. Throughout the study area, flow velocity ranged from 0.08 feet per year (between MW-5 and MW-7) to approximately 38 feet per year (between MW-1 and MW-8). The site average flow velocity is approximately three feet per year for the evaluated screen intervals. Flow velocity values are summarized in **Table 5**; flow velocity was estimated with the most recent groundwater level measurements (April 5th, 2016).

# 4 Conclusions

Rounds 4 through 6 of the required eight monitoring events were conducted at Brickhaven No. 2 Mine Tract “A” Structural Fill site from January to April 2016. In conjunction with the 3rd monitoring event discussed in the *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report* (HDR, 2015), these events represent post-CCP placement conditions at the site. The first and second monitoring events were conducted prior to the placement of CCP on October 23, 2015, and therefore represent pre-existing site conditions; these results were also discussed in detail in the 2015 semi-annual report (HDR, 2015). The requisite one minimum independent background monitoring event specified in Permit No. 1910-STRUC-2015 have thus been met. Two additional monitoring events will occur prior to August 2016 for a total of six post-CCP placement events and two pre-CCP placement events.

A summary of the findings from the 4th through 6th monitoring events is provided below and in **Table 6-1** through **Table 6-3**:

- Groundwater was encountered at the site from approximately six feet below top of casing (MW-4; February 16, 2016) to approximately 60 feet below top of casing (MW-1;

April 5, 2016). Round 4 experienced the highest median groundwater elevation in 2016 thus far.

- Groundwater samples collected at monitoring wells BG-1, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8 indicated the presence of constituents above established NCGPS.
- Chloride exceeded its NCGPS in several separate wells during the 4$^{th}$ through 6$^{th}$ Rounds. Exceedances of chloride were similarly detected in the background monitoring events (i.e. 1$^{st}$ and 2$^{nd}$ Rounds) and during the first post-CCP placement monitoring event (i.e. Round 3). Chloride is likely naturally occurring due to site geological conditions. MW-5 has not exceeded its NCGPS during any monitoring event in 2015 or 2016.
- TDS consistently exceeded its NCGPS in eight of nine wells, including background well BG-1, during the 4$^{th}$, 5$^{th}$, and 6$^{th}$ Rounds. MW-5 has not exceeded its NCGPS for TDS during any monitoring event in 2015 or 2016. A decrease in TDS concentrations during the 3$^{rd}$ Round was noted in the 2015 semi-annual report (HDR, 2015) and was initially attributed to further well development. Subsequent TDS concentrations in the 4$^{th}$ through 6$^{th}$ monitoring events returned to approximately pre-CCP placement levels. Pace Analytical has verified all sampling, analytical, and quality control procedures were followed in accordance with all other sampling events. This short-term decrease in concentrations and exceedances may be associated with the installation of a geosynthetic liner around the time of the 3$^{rd}$ Round. Elevated TDS concentrations remain and are likely naturally occurring throughout the site.
- Groundwater pH was in exceedance in MW-4 for all 4$^{th}$ through 6$^{th}$ monitoring events and was in exceedance in MW-6 for Round 5 and Round 6. Low pH previously observed at BG-1 has stabilized above the NCGPS threshold during the 4$^{th}$ through 6$^{th}$ monitoring events. Intermittently low pH is likely naturally occurring at the site, with several field pH values only slightly above the 6.5 SU threshold for multiple monitoring events; occasional fluctuations around this NCGPS threshold will likely continue.
- Antimony exhibited multiple intermittent exceedances in different wells during the 4$^{th}$ through 6$^{th}$ Rounds, although MW-2, MW-3, and MW-8 exhibited exceedances of antimony for all three rounds. These detection patterns and concentration levels are similar to pre-CCP placement and are likely naturally occurring.
- Thallium exceedances were observed in six separate wells over the 4$^{th}$ and 5$^{th}$ Rounds. Thallium was non-detect for all monitoring wells during the 6$^{th}$ Round.
- Barium, chromium, cobalt, and vanadium exhibited multiple exceedances in different wells during all three monitoring events. These constituents are likely naturally occurring.
- Analytical data from the 4$^{th}$ through 6$^{th}$ monitoring events indicate placement of CCP has not impacted groundwater at the site.
- Surface water collected at two off-site locations exhibited exceedances of thallium during the 4$^{th}$ and 5$^{th}$ Rounds and cobalt and lead during the 5$^{th}$ Round. Analytical data from the 4$^{th}$ through 6$^{th}$ monitoring events indicate surface water has not been impacted by the placement of CCP at the site.
- Leachate samples generally exhibited an increase in exceedance frequency and parameter concentrations relative to the first leachate sample collected in Round 3.

NCGPS exceedances during the 4th through 6th Rounds included antimony, arsenic, chromium, selenium, TDS, and vanadium.

# 5 Recommendations

Based on the findings of this assessment, HDR makes the following recommendations:

- Groundwater and surface water sampling should continue to be conducted on an approximate 45-day frequency until all eight (8) independent background sampling events have been completed.
- The 7th monitoring event should commence on or before May 25th, 2016, and should include groundwater, surface water, and leachate sampling.

# 6 References

Buxton Environmental. 2015a. *Water Quality Monitoring Plan for Brickhaven No.2 Mine Tract "A" Structural Fill.*

Buxton Environmental. 2015b. *Compliance Groundwater Well Installation, Development, Surveying and Hydraulic Conductivity Determination Activities Report for Brickhaven No.2 Mine Tract "A" Structural Fill.*

HDR. 2014. *Permit Application for Brickhaven No.2 Mine Tract "A" Structural Fill including Design Hydrogeological Report.*

HDR. 2015. *2015 Semi-Annual Groundwater, Surface Water, and Leachate Sampling Report*

North Carolina Department of Natural Resources and Community Development. 1985. *North Carolina Geologic Map.*

North Carolina General Assembly. *Coal Ash Management Act (CAMA) of 2014 (Senate Bill 729).* Ratified.

NCDEQ. 2008. *Solid Waste Section Guidelines for Groundwater, Soil, and Surface Water Sampling.*

Singhal, B. B.S. and R. P. Gupta. 2010. *Applied Hydrogeology of Fractured Rocks: Springer, 2nd Edition*, 408p. (Table 8-1, p. 140)

United States Geological Survey. 2004. *Arsenic, Nitrate, and Chloride in Groundwater, Oakland County, Michigan.*

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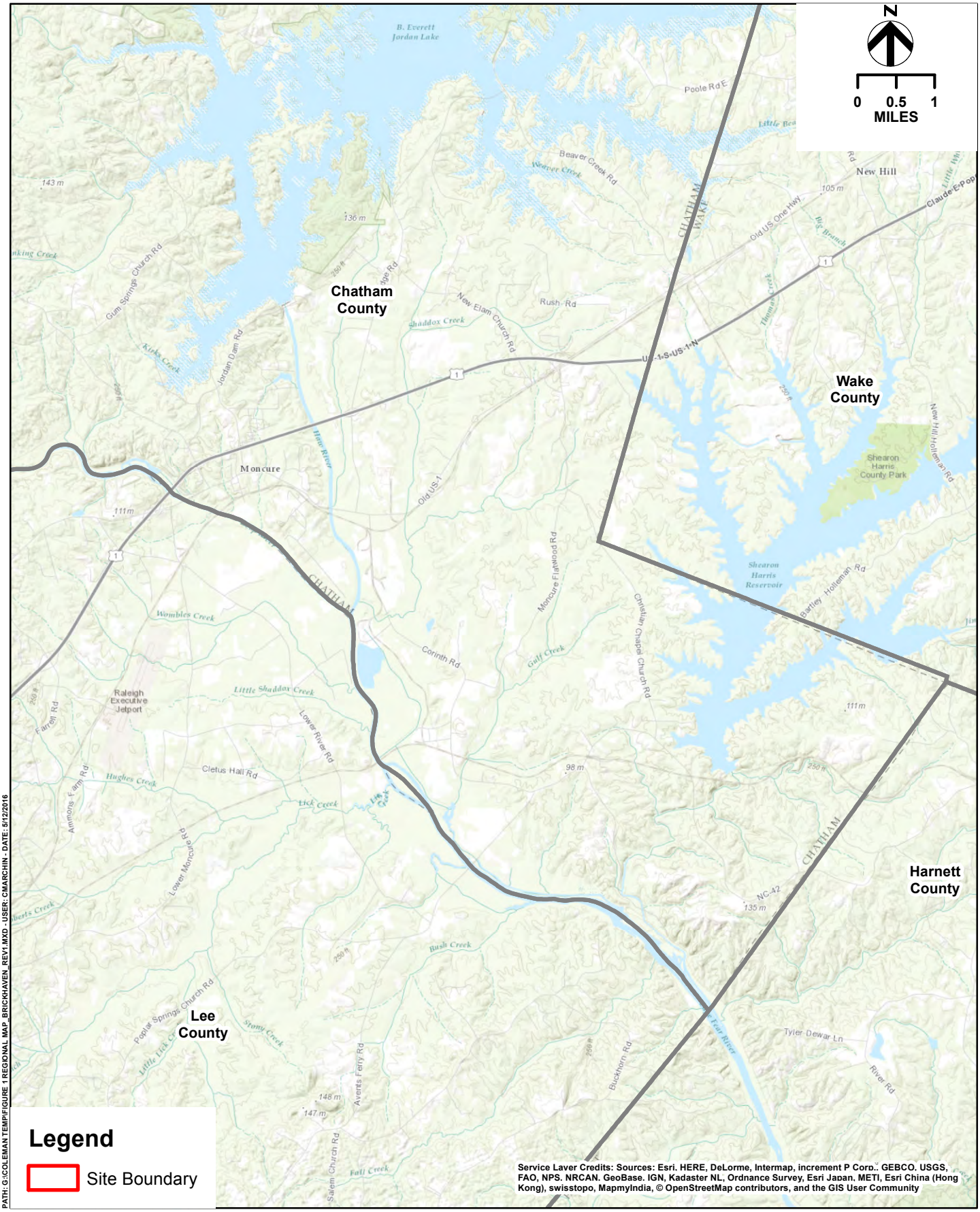
# Figures

Figure 1: Regional Site Location Map
Figure 2: Regional USGS Topographic Map
Figure 3: Site Layout Map with Monitoring Wells Locations
Figure 4: Surface Water Sample Location Map
Figure 5: Leachate Sample Collection Location
Figure 6: Potentiometric Surface Map




PATH: G:\COLEMAN TEMP\FIGURE 1 REGIONAL MAP_BRICKHAVEN_REV1.MXD - USER: CMARCHIN - DATE: 5/12/2016

# REGIONAL SITE LOCATION MAP
# CHARAH, INC.
# MONCURE, NORTH CAROLINA

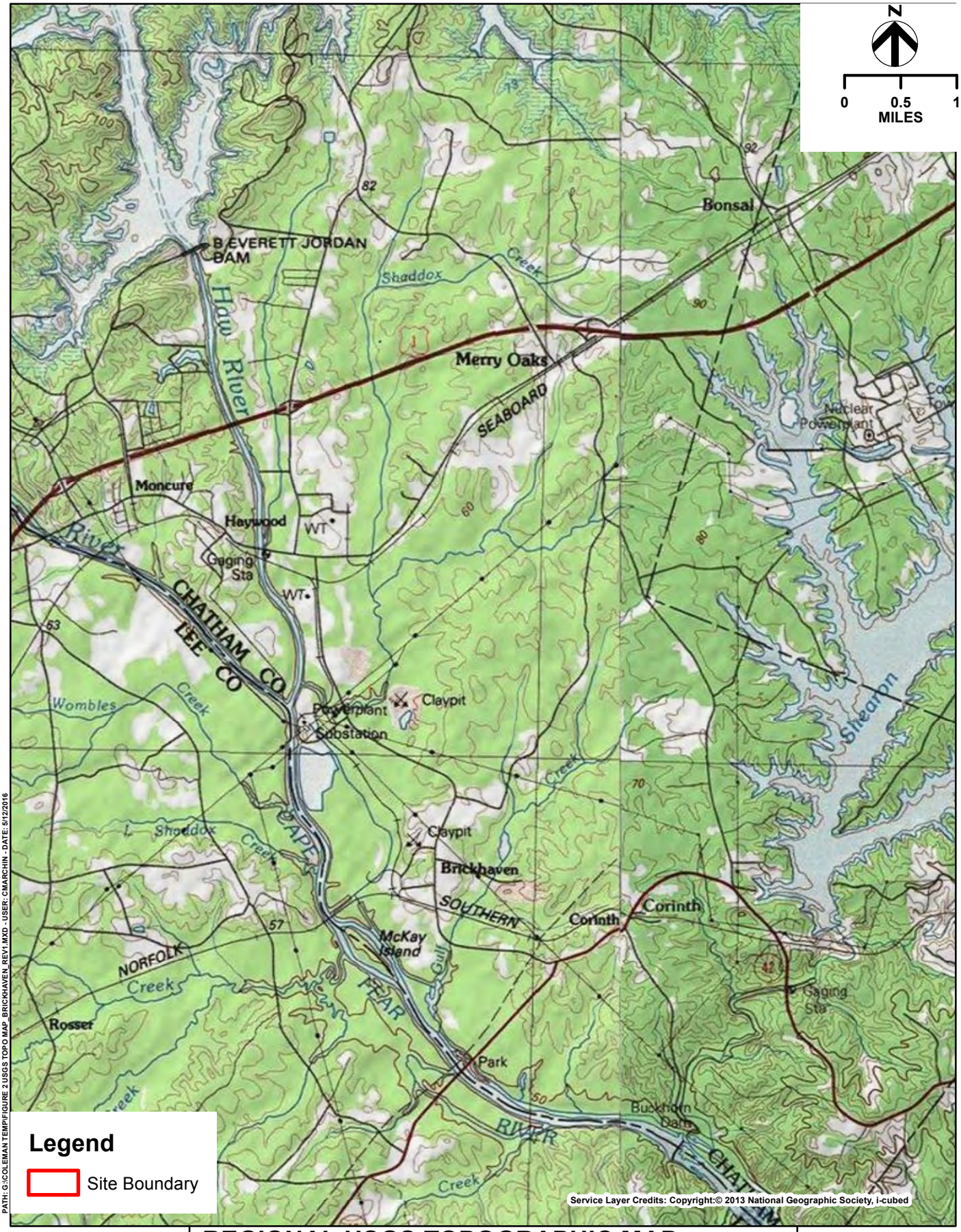
BRICKHAVEN NO. 2 MINE TRACT "A"

DATE

MAY 2016

FIGURE

1




PATH: G:\COLEMAN TEMP\FIGURE 2 USGS TOPO MAP_BRICKHAVEN_REV1.MXD - USER: CMARCHIN - DATE: 5/12/2016

# REGIONAL USGS TOPOGRAPHIC MAP
# CHARAH, INC.
# MONCURE, NORTH CAROLINA

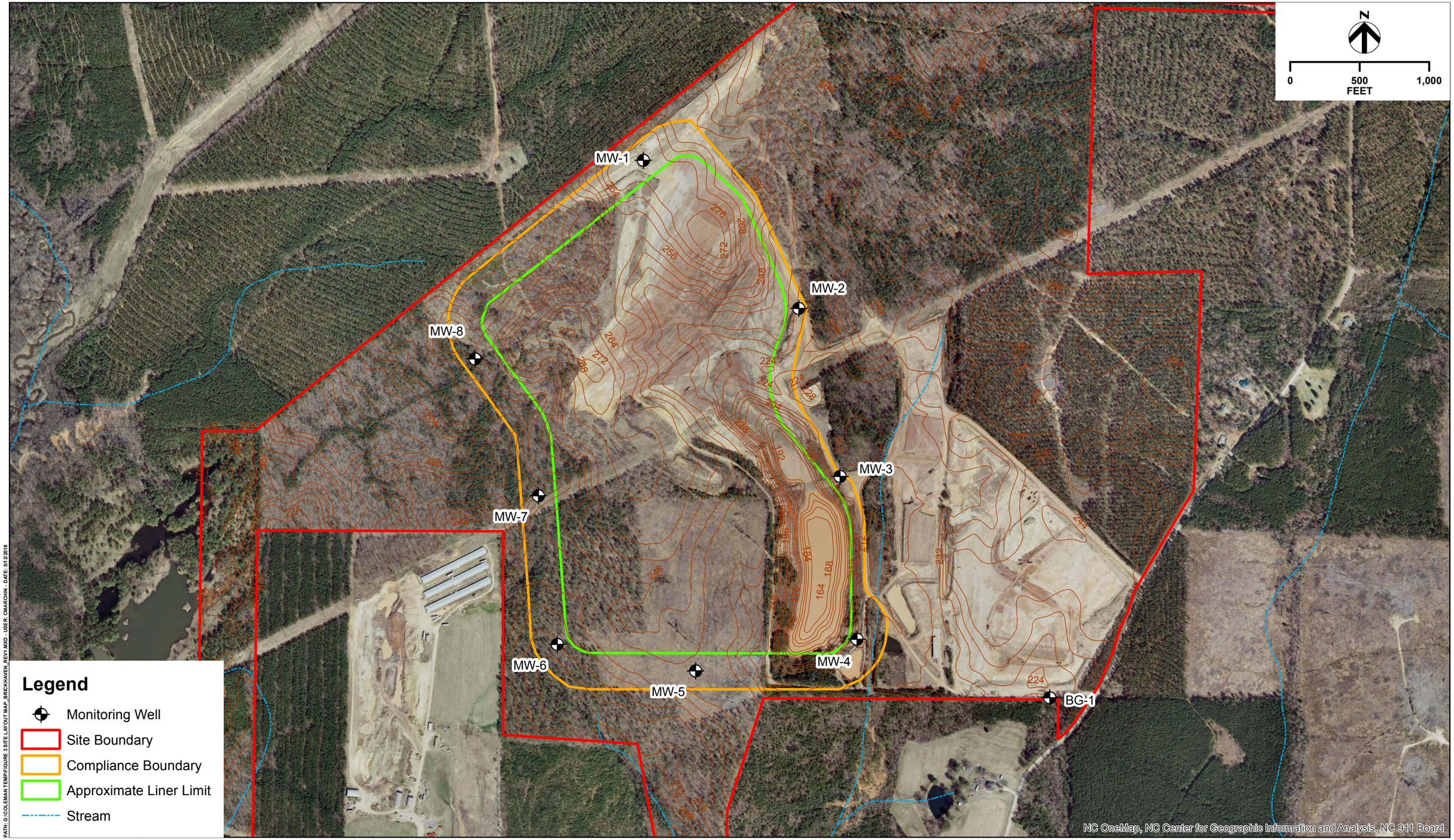
BRICKHAVEN NO. 2 MINE TRACT "A"

DATE

MAY 2016

FIGURE

2




PATH: G:\COLEMAN\TEMP\FIGURE 3 SITE LAYOUT MAP_BRICKHAVEN_REV1.MXD - USER: CMARCHIN - DATE: 6/12/2016

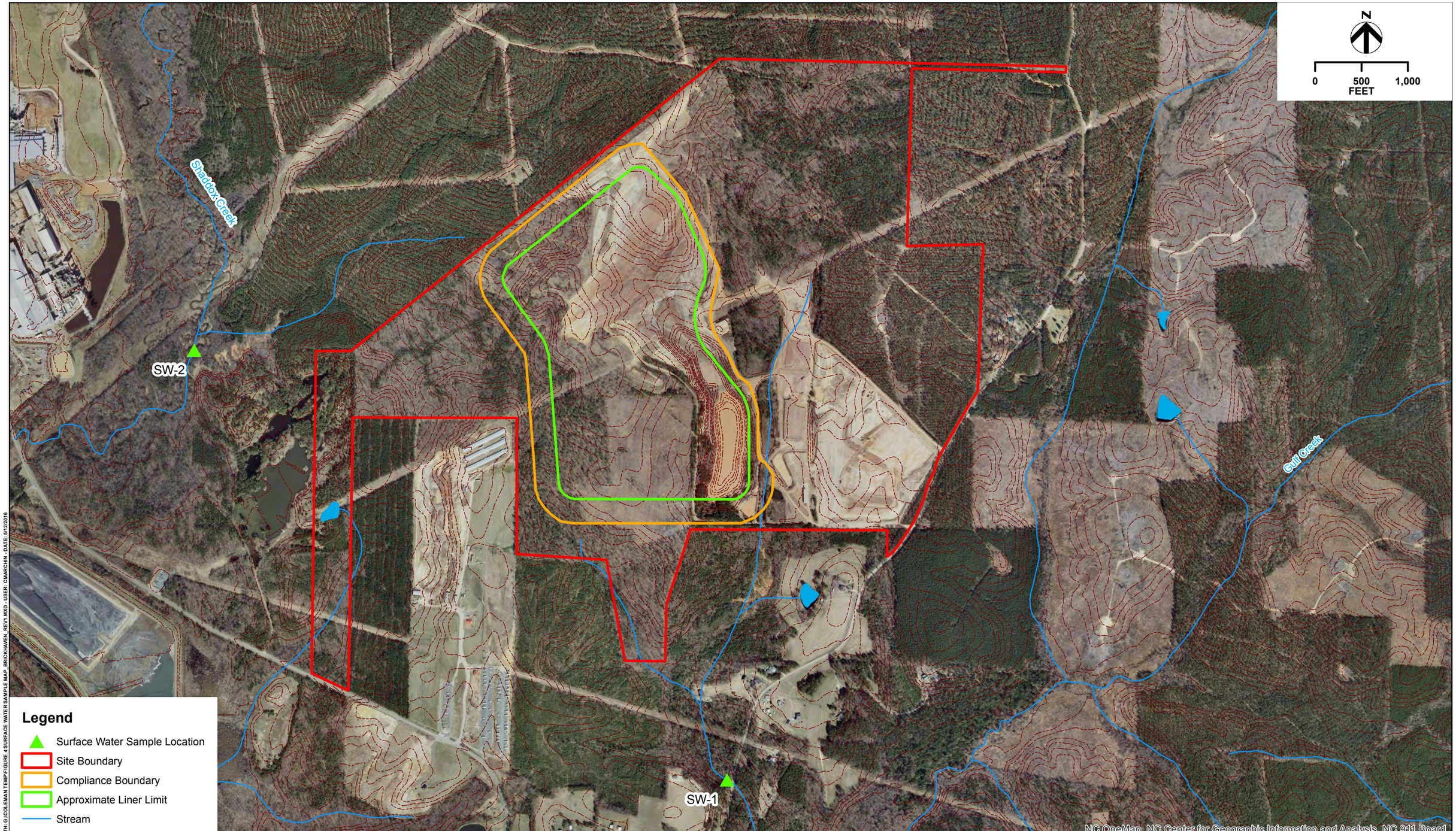
HDR

**SITE LAYOUT MAP**
**CHARAH, INC.**
**MONCURE, NORTH CAROLINA**

BRICKHAVEN NO. 2 MINE TRACT "A"

DATE
MAY 2016

FIGURE
3




PATH: S:\COLEMAN\TEMP\FIGURE 4 SURFACE WATER SAMPLE MAP_BRICKHAVEN_REV1.MXD - USER: CMARCHIN - DATE: 5/12/2016

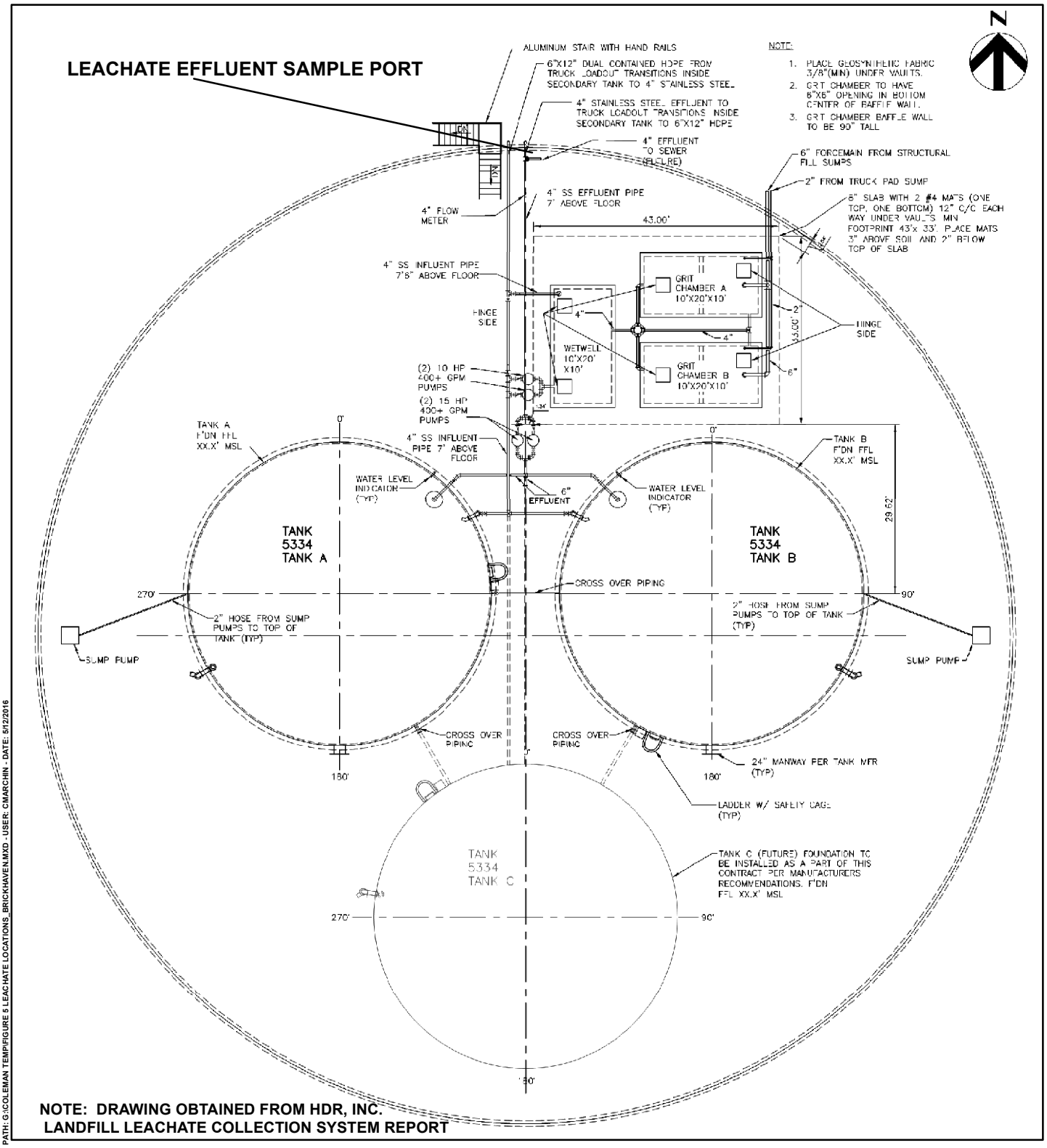
HDR

**SURFACE WATER SAMPLE LOCATION MAP**
**CHARAH, INC.**
**MONCURE, NORTH CAROLINA**

BRICKHAVEN NO. 2 MINE TRACT "A"

DATE MAY 2016

FIGURE 4




NOTE: DRAWING OBTAINED FROM HDR, INC.
LANDFILL LEACHATE COLLECTION SYSTEM REPORT

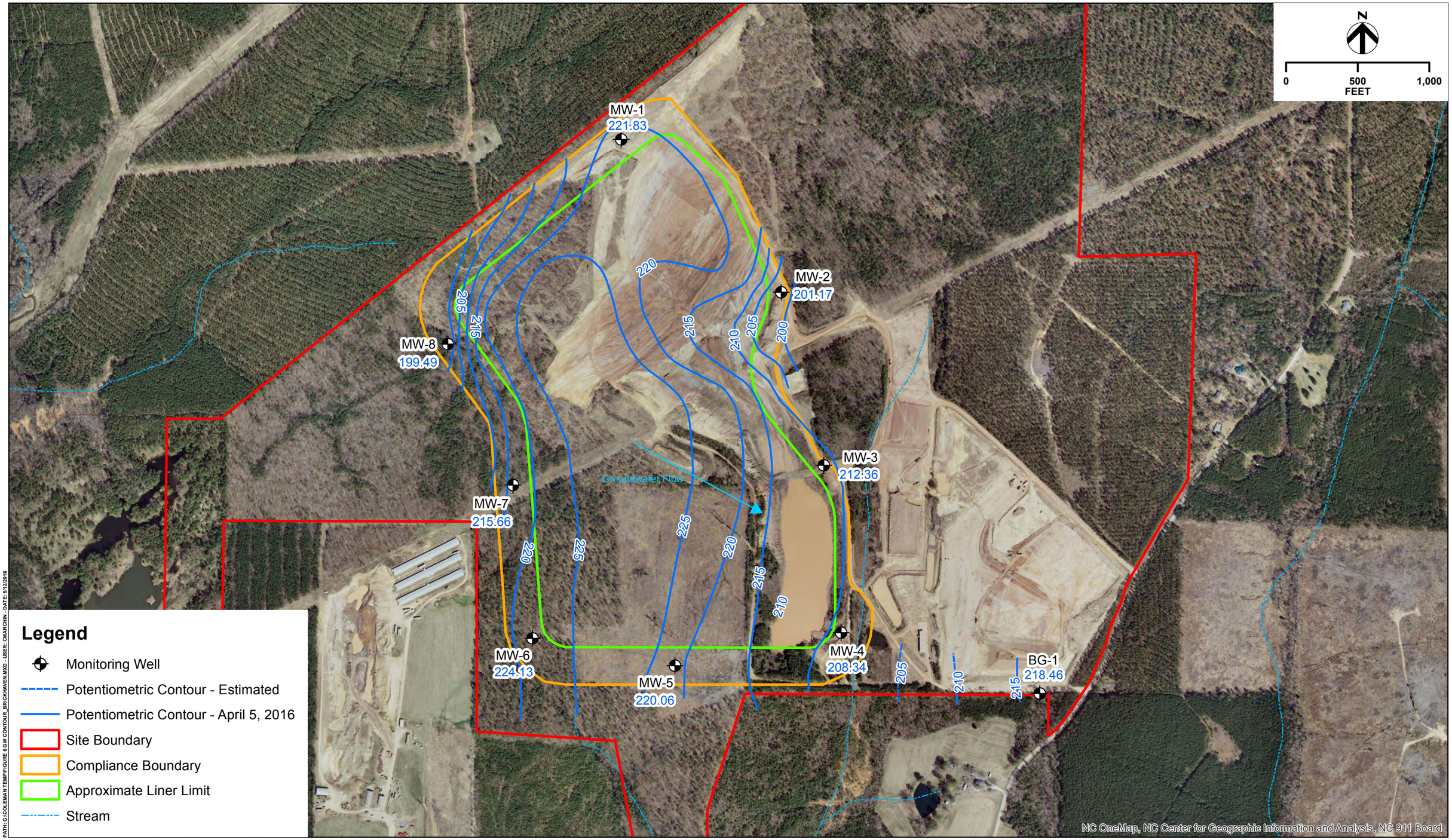
PATH: G:\COLEMAN TEMP\FIGURE 5 LEACHATE LOCATIONS_BRICKHAVEN.MXD - USER: CMARCHIN - DATE: 5/12/2016

# LEACHATE SAMPLE COLLECTION LOCATION
# CHARAH, INC.
# MONCURE, NORTH CAROLINA

BRICKHAVEN NO. 2 MINE TRACT "A"

DATE
MAY 2016

FIGURE
5




PATH: G:\COLEMAN TEMP\FIGURE 6 GW CONTOUR_BRICKHAVEN.MXD - USER: CMARCHIN - DATE: 5/12/2016

Note:
1. Groundwater data was collected by Pace Analytical Services on April 5, 2016.
2. Groundwater elevation of monitoring well MW-2 appears to be anomalously low in relation to surrounding topography and was not used in the potentiometric contouring process.

HDR

**POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016**
**CHARAH, INC,**

BRICKHAVEN NO. 2 MINE TRACT "A"

DATE
MAY 2016

FIGURE
6

# Tables

Table 1: Well Construction and Survey Summary
Table 2: Groundwater Elevations for April 5, 2016
Table 3: Hydraulic Conductivity
Table 4: Hydraulic Gradients
Table 5: Groundwater Flow Velocities
Table 6s: Analyte Detections and Exceedances

**Table 1: Well Construction and Survey Summary**

| Well ID | Northing | Easting | Pad Elev. (msl) | TOC Elev. (msl) | TD BGS (ft) | TD BTOC (ft) | Screen Length (ft) | Screen Interval (msl) | Lithologic Unit |
|---|---|---|---|---|---|---|---|---|---|
| BG-1 | 670898.50 | 1996348.25 | 225.64 | 228.19 | 40.50 | 43.05 | 15 | 200.14 - 185.14 | Layered Rock/PWR* |
| MW-1 | 674737.98 | 1993417.69 | 277.28 | 280.08 | 72.50 | 75.30 | 15 | 220.20 - 205.20 | Layered Rock/PWR* |
| MW-2 | 673677.07 | 1994537.54 | 227.45 | 229.97 | 45.00 | 47.52 | 15 | 197.45 - 182.45 | Layered Rock/PWR* |
| MW-3 | 672474.63 | 1994834.76 | 220.00 | 222.56 | 40.80 | 43.36 | 15 | 194.20 - 179.20 | PWR |
| MW-4 | 671326.48 | 1994974.40 | 214.49 | 217.13 | 22.70 | 25.34 | 10 | 201.79 - 191.79 | Residuum/PWR |
| MW-5 | 671081.19 | 1993779.03 | 242.72 | 244.86 | 44.00 | 46.14 | 10 | 208.72 - 198.72 | PWR |
| MW-6 | 671267.60 | 1992793.34 | 228.63 | 231.10 | 27.00 | 29.47 | 15 | 216.63 - 201.63 | Residuum/PWR |
| MW-7 | 672306.28 | 1992642.35 | 229.53 | 231.71 | 15.00 | 17.18 | 10 | 224.53 - 214.53 | Residuum/PWR |
| MW-8 | 673304.83 | 1992200.37 | 233.41 | 236.47 | 46.00 | 49.06 | 15 | 202.41 - 187.41 | PWR |

Notes:

1. Top-of-casing and ground surface elevations and horizontal locations at MW-4 (PZM-1), MW-5 (PZM-22) and MW-7 (PZM-27) determined by Lawrence Surveying of Monroe, NC.
2. Top-of-casing and ground surface elevations and horizontal locations at BG-1, MW-1, MW-2, MW-3, MW-6 and MW-8 determined by McAdams of Durham, NC.
3. TD=total depth; BGS=below ground surface;TOC=top of casing; DTW = Depth-to-Water; BTOC = below top-of-casing, msl = above mean sea level, ft.

* = interpreted lithologic unit based on relative drilling hardness and geologic judgment during well installation

**Table 2: Groundwater Elevations**
**April 5, 2016**

| Well ID | Screen Interval Elevation (msl) | DTW BTOC (ft) | DTW Elevation (msl) | Lithologic Unit |
|---|---|---|---|---|
| | | | | |
| BG-1 | 200.14 - 185.14 | 9.73 | 218.46 | Layered Rock/PWR* |
| MW-1 | 220.20 - 205.20 | 58.25 | 221.83 | Layered Rock/PWR* |
| MW-2 | 197.45 - 182.45 | 28.80 | 201.17 | Layered Rock/PWR* |
| MW-3 | 194.20 - 179.20 | 10.20 | 212.36 | PWR |
| MW-4 | 201.79 - 191.79 | 8.79 | 208.34 | Residuum/PWR |
| MW-5 | 208.72 - 198.72 | 24.80 | 220.06 | PWR |
| MW-6 | 216.63 - 201.63 | 6.97 | 224.13 | Residuum/PWR |
| MW-7 | 224.53 - 214.53 | 16.05 | 215.66 | Residuum/PWR |
| MW-8 | 202.41 - 187.41 | 36.98 | 199.49 | PWR |

Notes:

1. Depth to water measurements obtained on April 5, 2016 to the nearest 0.01 foot with a depth-to-water meter by Buxton Environmental, Inc.
2. TD=total depth; BGS=below ground surface;TOC=top of casing; DTW = Depth-to-Water; BTOC = below top-of-casing, msl = above mean sea level, ft.

* = interpreted lithologic unit based on relative drilling hardness and geologic judgment during well installation

**Table 3: Hydraulic Conductivity**
**Slug Testing - September 2015**

| Well ID | DTW BTOC (ft) | Length of Water Column (ft) | Screen Length (ft) | Screen Interval (msl) | Hydraulic Conductivity (k, cm/sec) | Lithologic Unit |
|---|---|---|---|---|---|---|
| | | | | | | |
| BG-1 | 12.46 | 30.59 | 15 | 200.14 - 185.14 | 7.76E-05 | Layered Rock/PWR* |
| MW-1 | 59.97 | 15.33 | 15 | 220.20 - 205.20 | 4.11E-04 | Layered Rock/PWR* |
| MW-2 | 40.98 | 6.54 | 15 | 197.45 - 182.45 | 3.41E-06 | Layered Rock/PWR* |
| MW-3 | 15.55 | 27.81 | 15 | 194.20 - 179.20 | 4.08E-07 | PWR |
| MW-4 | 11.61 | 14.04 | 10 | 201.79 - 191.79 | 1.41E-04 | Residuum/PWR |
| MW-5 | 14.17 | 32.37 | 10 | 208.72 - 198.72 | 8.01E-06 | PWR |
| MW-6 | 8.25 | 21.22 | 15 | 216.63 - 201.63 | 1.10E-04 | Residuum/PWR |
| MW-7 | 9.11 | 8.07 | 10 | 224.53 - 214.53 | 1.26E-06 | Residuum/PWR |
| MW-8 | 36.4 | 12.66 | 15 | 202.41 - 187.41 | 1.29E-04 | PWR |

Notes:

1. Depth to water measurements obtained on September, 2015 to the nearest 0.01 foot with a depth-to-water meter by Buxton Environmental, Inc. prior to slug testing.
2. TD=total depth; BGS=below ground surface;TOC=top of casing; DTW = Depth-to-Water; BTOC = below top-of-casing, msl = above mean sea level, ft.
3. Hydraulic conductivity values determined by Buxton Environmental, Inc. on September 10, 2015 by conducting rising head slug tests; and solved utilizing the Bouwer-Rice (unconfined slug test) solution with AQTESOLV for Windows Version 4.50 software by Hydrosolv, Inc. (1996-2007).

* = interpreted lithologic unit based on relative drilling hardness during well installation

**Table 4: Horizontal Hydraulic Gradients**

| Horizontal Hydraulic Gradient (*i* , dh/dl) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **BG-1** | **MW-1** | **MW-2** | **MW-3** | **MW-4** | **MW-5** | **MW-6** | **MW-7** | **MW-8** |
| **BG-1** | - | 0.0007 | | | | 0.001 | 0.002 | | |
| **MW-1** | | - | | | | | 0.001 | | |
| **MW-2** | 0.005 | 0.01 | - | 0.01 | 0.003 | 0.01 | 0.01 | 0.01 | |
| **MW-3** | 0.003 | 0.004 | | - | | 0.00 | 0.005 | 0.002 | |
| **MW-4** | 0.007 | 0.004 | | 0.003 | - | 0.01 | 0.007 | 0.00 | |
| **MW-5** | | 0.000482 | | | | - | 0.003909 | | |
| **MW-6** | | | | | | | - | | |
| **MW-7** | 0.000706 | 0.002417 | | | | 0.003 | 0.007928 | - | |
| **MW-8** | 0.004 | 0.01 | 0.00071 | 0.005 | 0.003 | 0.01 | 0.01 | 0.01 | - |

1. Positive horizontal hydraulic gradients calculated by dividing the difference in hydraulic head between a well pair by the lenth of the flow path between the well pair. (*i* = dh/dl)
2. All well pairs assumed to be screened in same surficial aquifer unit
3. Horizontal flow path distance calculated by $\sqrt{(Easting_1 - Easting_2)^2 + (Northing_1 - Northing_2)^2}$
4. Top-of-casing and ground surface elevations and horizontal locations at MW-4 (PZM-1), MW-5 (PZM-22) and MW-7 (PZM-27) determined by Lawrence Surveying of Monroe, NC.
5. Top-of-casing and ground surface elevations and horizontal locations at BG-1, MW-1, MW-2, MW-3, MW-6 and MW-8 determined by McAdams of Durham, NC.
6. Static water level elevations from April 5, 2016 monitoring event. See **Table 2**.

**Table 5: Groundwater Flow Velocities**

| Groundwater Flow Velocity Between Well Pairs ($V_s$, ft/year) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **BG-1** | **MW-1** | **MW-2** | **MW-3** | **MW-4** | **MW-5** | **MW-6** | **MW-7** | **MW-8** |
| **BG-1** | - | 1.7 | | | | 0.2 | 1.3 | | |
| **MW-1** | | - | | | | | 1.2 | | |
| **MW-2** | 1.4 | 8.3 | - | 0.2 | 0.7 | 0.6 | 1.5 | 0.1 | |
| **MW-3** | 0.3 | 0.8 | | - | | 0.1 | 0.3 | 0.0 | |
| **MW-4** | 7.1 | 8.3 | | 0.3 | - | 3.1 | 6.4 | 0.3 | |
| **MW-5** | | 0.4 | | | | - | 1.06 | | |
| **MW-6** | | | | | | | - | | |
| **MW-7** | 0.1 | 0.5 | | | | 0.1 | 0.64 | - | |
| **MW-8** | 5.5 | 37.7 | 0.25 | 0.6 | 3.4 | 3.3 | 12.6 | 1.7 | - |

1. Flow velocities between well pairs estimated by $V_S = \frac{Ki}{P_e}$

   Where: $V_s$ = groundwater flow velocity

   K = horizontal hydraulic conductivity (See **Table 3**)

   i = horizontal hydraulic gradient (See **Table 4**)

   $P_e$ = average effective porosity between given well pairs

2. Effective porosity values from geotechnical testing and the literature (McWhorter and Sunada, 1977; Sinhal and Gupta, 2010) where geotechnical data was not available.

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**Table 6-1: Analytical Detections and Exceedances**
**Fourth Round Results**
**January 2016**

| | | Groundwater Analysis | | | | | | | | | | | Quality Control | | | Surface Water Analysis | | | Leachate Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **CAS Number** | BG-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | MW-8 | ***NCGPS*** | ***Federal MCL*** | Equip. Blank | Amb. Blank | Duplicate (MW-1) | SW-1 | SW-2 | ***NCSWWS*** | Leachate-1 | ***NCGPS*** |
| **EPA APPENDIX III** | | | | | | | | | | | | | | | | | | | | |
| Boron (µg/l) | 7440-42-8 | 7.5 | 9.6 | 37.8 | 42 | 7.2 | 10.8 | 8.9 | 48.3 | 9.2 | *700* | -- | ND | ND | 9.6 | 12.7 | 18.2 | *NS* | 34.5 | *700* |
| Calcium (µg/l) | 7440-70-2 | 28,600 | 108,000 | 188,000 | 188,000 | 35,200 | 13,500 | 35,600 | 45,100 | 162,000 | *NS* | *NS* | ND | ND | 116,000 | 4,080 | 6,220 | *NS* | 10,700 | *NS* |
| Chloride (µg/l) | 16887-00-6 | **285,000** | **446,000** | **910,000** | **1,270,000** | **307,000** | 21,900 | **252,000** | **403,000** | **755,000** | *250,000* | -- | ND | ND | **447,000** | 7,600 | 6,700 | *250,000* | ND | *250,000* |
| Fluoride (µg/l) | 16984-48-8 | 130 | 140 | 290 | 260 | 350 | 560 | 410 | 350 | ND | *2,000* | -- | ND | ND | 130 | 120 | ND | *1,800* | ND | *2,000* |
| pH* (standard units) | - | 6.51 | 6.71 | 7.95 | 7.3 | **6.38** | 7.00 | 6.67 | 6.87 | 6.81 | *6.5-8.5* | -- | N/A | N/A | 6.71 | 6.17 | 6.15 | *6.0-9.0* | 7.66 | *6.5-8.5* |
| Sulfate (µg/l) | 14808-79-8 | 19,500 | 11,200 | 228,000 | 10,000 | 6,300 | 4,100 | 194,000 | 32,100 | 5,500 | *250,000* | -- | ND | ND | 11,000 | 18,200 | 9,400 | *250,000* | 9,900 | *250,000* |
| Total Dissolved Solids (µg/l) | - | **643,000** | **700,000** | **2,480,000** | **2,490,000** | **806,000** | 259,000 | **946,000** | **1,120,000** | **1,410,000** | *500,000* | -- | ND | ND | **950,000** | 205,000 | 72,000 | *500,000* | 40,000 | *500,000* |
| **EPA APPENDIX IV** | | | | | | | | | | | | | | | | | | | | |
| Antimony (µg/l) | 7440-36-0 | ND | ND | **8.7** | **9.2** | ND | ND | ND | ND | **7.6** | *1* | -- | ND | ND | ND | ND | ND | *5.6* | ND | *1* |
| Arsenic (µg/l) | 7440-38-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *10* | -- | ND | ND | ND | ND | ND | *10* | ND | *10* |
| Barium (ug/l) | 7440-39-3 | 310 | 220 | 262 | **802** | 176 | 102 | 140 | 269 | **1,430** | *700* | -- | ND | ND | 228 | 82.8 | 56.1 | *1,000* | 34.8 | *700* |
| Beryllium (µg/l) | 7440-41-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | -- | ND | ND | ND | ND | ND | *6.5* | ND | *4* |
| Cadmium (µg/l) | 7440-43-9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *2* | -- | ND | ND | ND | ND | ND | *2* | ND | *2* |
| Chromium (µg/l) | 7440-47-3 | ND | ND | **15.8** | ND | ND | ND | ND | ND | ND | *10* | -- | ND | ND | ND | ND | ND | *50* | ND | *10* |
| Cobalt (µg/l) | 7440-48-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | ND | ND | *3* | ND | *1* |
| Fluoride (µg/l) | 16984-48-8 | 130 | 140 | 290 | 260 | 350 | 560 | 410 | 350 | ND | *2,000* | -- | ND | ND | 130 | 0.12 | ND | *1,800* | ND | *2,000* |
| Lead (µg/l) | 7439-92-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *15* | -- | ND | ND | ND | ND | ND | *25* | ND | *15* |
| Lithium (µg/l) | 7439-93-2 | 15 | 30.1 | 144 | 65.4 | 23.2 | 6.4 | 55.8 | 21.7 | 39.6 | *NS* | *NS* | ND | ND | 30.7 | 2.40 | 0.78 | *NS* | 2.2 | *NS* |
| Mercury (µg/l) | 7439-97-6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | ND | ND | *0.012* | ND | *1* |
| Molybdenum (µg/l) | 7439-98-7 | ND | ND | 18.1 | 10.9 | ND | ND | 5.4 | 6.4 | ND | *NS* | *NS* | ND | ND | ND | ND | ND | *160* | ND | *NS* |
| Selenium (µg/l) | 7782-49-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *5* | ND | *20* |
| Thallium (µg/l) | 7440-28-0 | ND | ND | ND | ND | ND | ND | **6.2** | **8.0** | ND | *0.28* | -- | ND | ND | ND | **12.9** | **11.4** | *0.24* | ND | *0.28* |
| Radium 226 (pCi/l) | 13982-63-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | *5 (combined)* | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| Radium 228 (pCi/l) | 15262-20-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| **EPA APPENDIX I METALS** | | | | | | | | | | | | | | | | | | | | |
| Copper (µg/l) | 7440-50-8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1,000* | -- | ND | ND | ND | ND | ND | *7* | ND | *1,000* |
| Nickel (µg/l) | 7440-02-0 | ND | ND | 8.70 | ND | ND | ND | ND | ND | ND | *100* | -- | ND | ND | ND | ND | ND | *88* | ND | *100* |
| Silver (µg/l) | 7440-22-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *0.06* | ND | *20* |
| Vanadium (µg/l) | 7440-62-2 | ND | **6.2** | ND | ND | ND | ND | ND | ND | ND | *0.3* | -- | ND | ND | **6.7** | 8.9 | ND | *NS* | **5.6** | *0.3* |
| Zinc (µg/l) | 7440-66-6 | ND | 13.3 | ND | ND | ND | ND | 11.3 | ND | 18.7 | *1,000* | -- | ND | ND | 13.9 | 12.8 | 14.2 | *50* | 15.2 | *1,000* |
| **EPA APPENDIX I VOC'S** | | | | | | | | | | | | | | | | | | | | |
| Acetone (µg/l) | 67-64-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6,000* | -- | ND | ND | ND | ND | ND | *2,000* | ND | *6,000* |
| Bromodichloromethane (µg/l) | 75-27-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.6* | *80 (all THM's)* | ND | ND | ND | ND | ND | *NS* | ND | *0.6* |
| Bromoform (µg/l) | 75-25-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | | ND | ND | ND | ND | ND | *4.3* | ND | *4* |
| Chloroform (µg/l) | 67-66-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | | ND | ND | ND | ND | ND | *5.6* | ND | *70* |
| Dibromochloromethane (µg/l) | 124-48-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.4* | | ND | ND | ND | ND | ND | *NS* | ND | *0.4* |
| Carbon Disulfide (µg/l) | 75-15-0 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *700* | -- | ND | ND | ND | ND | ND | *NS* | ND | *700* |
| Dibromomethane (µg/l) | 74-95-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | -- | ND | ND | ND | ND | ND | *47* | ND | *70* |
| 1,4-Dichlorobenzene (µg/l) | 106-46-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6* | -- | ND | ND | ND | ND | ND | *63* | ND | *6* |

Notes:

1. Groundwater, surface water, and leachate samples collected on January 4 through January 6, 2016 and analyzed for above parameters by Pace Analytical Laboratories
2. ND = below detection limits; NE = not established; NS = no standard; NT = not tested; VOC's = volatile organic compounds
3. NCGPS = North Carolina Groundwater Protection Standard (J-flagged data not considered)
4. Federal MCL = Federal Maximum Contaminant Level in drinking water (Federal MCL provided when no established NCGPS; or for further clarification as with THM's)
5. NCSWWS = North Carolina Surface Water and Wetland Standards (15A NCAC 02B) for Gulf Creek (SW-1) and Shaddox Creek (SW-2) which are both Class WS-IV Waters or are National Criteria per EPA
6. THM's = trihalomethanes (bromodichloromethane, bromoform, chloroform and dibromochloromethane) (all generally associated with the breakdown of chlorinated muncipal water in contact with natural water)
7. **Bold** and **shade** denotes above established NCGPS's or NCSWWS; µg/l = micrograms per liter; pCi/l - picocuries per liter
8. B = detected in method blank; J = estimated result <PQL (practical quantitation limit aka report limit (RL)) and >=MDL (method detection limit aka MDC)
9. pH was field tested by Pace Analytical Laboratories

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**Table 6-2: Analytical Detections and Exceedances**
**Fifth Round Results**
**February 2016**

| | | Groundwater Analysis | | | | | | | | | | | Quality Control | | | Surface Water Analysis | | | Leachate Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **CAS Number** | BG-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | MW-8 | ***NCGPS*** | ***Federal MCL*** | Equip. Blank | Amb. Blank | Dup. (MW-1) | SW-1 | SW-2 | ***NCSWWS*** | Leachate-1 | ***NCGPS*** |
| **EPA APPENDIX III** | | | | | | | | | | | | | | | | | | | | |
| Boron (µg/l) | 7440-42-8 | 5.5 | 10.0 | 37.4 | 35.8 | 5.7 | 10.2 | 6.6 | 35.3 | 8.7 | *700* | -- | 19 | 19 | 9.2 | 8.6 | 14.7 | *NS* | 329 | *700* |
| Calcium (µg/l) | 7440-70-2 | 29,500 | 57,700 | 207,000 | 174,000 | 35,200 | 16,900 | 39,200 | 47,900 | 137,000 | *NS* | *NS* | ND | ND | 68,000 | 6,630 | 5,030 | *NS* | 65,000 | *NS* |
| Chloride (µg/l) | 16887-00-6 | **277,000** | 167,000 | **1,190,000** | **1,280,000** | 188,000 | 21,300 | 242,000 | **330,000** | **663,000** | *250,000* | -- | ND | ND | 208,000 | 5,500 | 5,400 | *250,000* | 7,100 | *250,000* |
| Fluoride (µg/l) | 16984-48-8 | 130 | 160 | 220 | 210 | 360 | 550 | 340 | 270 | ND | *2,000* | -- | ND | ND | 150 | 120 | ND | *1,800* | 130 | *2,000* |
| pH* (standard units) | - | 6.52 | 6.84 | 7.63 | 7.22 | **6.33** | 7.09 | **6.35** | 6.87 | 6.82 | *6.5-8.5* | -- | N/A | N/A | 6.84 | 7.58 | 6.36 | *6.0-9.0* | 7.25 | *6.5-8.5* |
| Sulfate (µg/l) | 14808-79-8 | 18,600 | 8,700 | 247,000 | 9,100 | 5,600 | 3,600 | 87,700 | 40,400 | 5,600 | *250,000* | -- | ND | ND | 9,300 | 5,000 | 4,500 | *250,000* | 125,000 | *250,000* |
| Total Dissolved Solids (µg/l) | - | **650,000** | **593,000** | **2,470,000** | **2,270,000** | **800,000** | 263,000 | **783,000** | **950,000** | **1,050,000** | *500,000* | -- | 72,000 | 93,000 | **660,000** | **614,000** | 181,000 | *500,000* | 315,000 | *500,000* |
| **EPA APPENDIX IV** | | | | | | | | | | | | | | | | | | | | |
| Antimony (µg/l) | 7440-36-0 | ND | ND | **10.7** | **10.8** | **5.0** | ND | ND | ND | **6.5** | *1* | -- | ND | ND | ND | ND | ND | *5.6* | **13.5** | *1* |
| Arsenic (µg/l) | 7440-38-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *10* | -- | ND | ND | ND | ND | ND | *10* | **25.6** | *10* |
| Barium (ug/l) | 7440-39-3 | 354 | 70 | 318 | **855** | 157 | 129 | 118 | 254 | **1490** | *700* | -- | ND | ND | 89.3 | 438 | 47.5 | *1,000* | 205 | *700* |
| Beryllium (µg/l) | 7440-41-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | -- | ND | ND | ND | 2.1 | ND | *6.5* | ND | *4* |
| Cadmium (µg/l) | 7440-43-9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *2* | -- | ND | ND | ND | ND | ND | *2* | ND | *2* |
| Chromium (µg/l) | 7440-47-3 | ND | ND | **23.3** | ND | ND | ND | ND | **23.7** | ND | *10* | -- | ND | ND | ND | 20.4 | ND | *50* | **66.4** | *10* |
| Cobalt (µg/l) | 7440-48-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | **13.1** | ND | *3* | ND | *1* |
| Fluoride (µg/l) | 16984-48-8 | 130 | 160 | 220 | 210 | 360 | 550 | 340 | 270 | ND | *2,000* | -- | ND | ND | 150 | 120 | ND | *1,800* | 130 | *2,000* |
| Lead (µg/l) | 7439-92-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *15* | -- | ND | ND | ND | **37.3** | ND | *25* | ND | *15* |
| Lithium (µg/l) | 7439-93-2 | 17.1 | 19.2 | 88.4 | 75.5 | 22.8 | 6.3 | 37.1 | 17.7 | 33.4 | *NS* | *NS* | ND | ND | 19.7 | 1.6 | 1.5 | *NS* | 21.7 | *NS* |
| Mercury (µg/l) | 7439-97-6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | ND | ND | *0.012* | ND | *1* |
| Molybdenum (µg/l) | 7439-98-7 | 6.8 | ND | 19.1 | 13.8 | ND | ND | ND | ND | 5.6 | *NS* | *NS* | ND | ND | ND | ND | 6.3 | *160* | 110 | *NS* |
| Selenium (µg/l) | 7782-49-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *5* | **388** | *20* |
| Thallium (µg/l) | 7440-28-0 | **13.7** | ND | **10.3** | ND | ND | **14.8** | ND | ND | **8.8** | *0.28* | -- | ND | ND | ND | ND | **13.9** | *0.24* | ND | *0.28* |
| Radium 226 (pCi/l) | 13982-63-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | *5 (combined)* | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| Radium 228 (pCi/l) | 15262-20-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| **EPA APPENDIX I METALS** | | | | | | | | | | | | | | | | | | | | |
| Copper (µg/l) | 7440-50-8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1,000* | -- | ND | ND | ND | **24.5** | ND | *7* | ND | *1,000* |
| Nickel (µg/l) | 7440-02-0 | ND | ND | 13.5 | ND | ND | ND | ND | 13.2 | ND | *100* | -- | ND | ND | ND | 16.8 | ND | *88* | ND | *100* |
| Silver (µg/l) | 7440-22-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *0* | ND | *20* |
| Vanadium (µg/l) | 7440-62-2 | **5.1** | ND | ND | ND | ND | ND | ND | ND | ND | *0.3* | -- | ND | ND | ND | 61.3 | 6.1 | *NS* | **58.6** | *0.3* |
| Zinc (µg/l) | 7440-66-6 | ND | ND | 27.2 | ND | ND | ND | ND | ND | 14.6 | *1,000* | -- | ND | ND | ND | **91.1** | 16.2 | *50* | 53.6 | *1,000* |
| **EPA APPENDIX I VOC'S** | | | | | | | | | | | | | | | | | | | | |
| Acetone (µg/l) | 67-64-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6,000* | -- | ND | ND | ND | ND | ND | *2,000* | ND | *6,000* |
| Bromodichloromethane (µg/l) | 75-27-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.6* | *80 (all THM's)* | ND | ND | ND | ND | ND | *NS* | ND | *0.6* |
| Bromoform (µg/l) | 75-25-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | | ND | ND | ND | ND | ND | *4.3* | ND | *4* |
| Chloroform (µg/l) | 67-66-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | | ND | ND | ND | ND | ND | *5.6* | ND | *70* |
| Dibromochloromethane (µg/l) | 124-48-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.4* | | ND | ND | ND | ND | ND | *NS* | ND | *0.4* |
| Carbon Disulfide (µg/l) | 75-15-0 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *700* | -- | ND | ND | ND | ND | ND | *NS* | ND | *700* |
| Dibromomethane (µg/l) | 74-95-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | -- | ND | ND | ND | ND | ND | *47* | ND | *70* |
| 1,4-Dichlorobenzene (µg/l) | 106-46-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6* | -- | ND | ND | ND | ND | ND | *63* | ND | *6* |

Notes:

1. Groundwater, surface water, and leachate samples collected on February 16 through February 18, 2016 and analyzed for above parameters by Pace Analytical Laboratories
2. ND = below detection limits; NE = not established; NS = no standard; NT = not tested; VOC's = volatile organic compounds
3. NCGPS = North Carolina Groundwater Protection Standard (J-flagged data not considered)
4. Federal MCL = Federal Maximum Contaminant Level in drinking water (Federal MCL provided when no established NCGPS; or for further clarification as with THM's)
5. NCSWWS = North Carolina Surface Water and Wetland Standards (15A NCAC 02B) for Gulf Creek (SW-1) and Shaddox Creek (SW-2) which are both Class WS-IV Waters or are National Criteria per EPA
6. THM's = trihalomethanes (bromodichloromethane, bromoform, chloroform and dibromochloromethane) (all generally associated with the breakdown of chlorinated muncipal water in contact with natural water)
7. **Bold** and **shade** denotes above established NCGPS's or NCSWWS; µg/l = micrograms per liter; pCi/l - picocuries per liter
8. B = detected in method blank; J = estimated result <PQL (practical quantitation limit aka report limit (RL)) and >=MDL (method detection limit aka MDC)
9. Ambient blank samples obtained during each of three days of the 5th Round Monitoring Event. Ambient Blank/equipment blank from 02/17/16 presented above; two remaining ambient blank samples were non-detect for all parameters.
10. pH was field tested by Pace Analytical Laboratories

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**Table 6-3: Analytical Detections and Exceedances**
**Sixth Round Results**
**April 2016**

| | | Groundwater Analysis | | | | | | | | | | | Quality Control | | | Surface Water Analysis | | | Leachate Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **CAS Number** | BG-1 | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | MW-8 | ***NCGPS*** | ***Federal MCL*** | Equip. Blank | Amb. Blank | Duplicate (MW-1) | SW-1 | SW-2 | ***NCSWWS*** | Leachate-1 | ***NCGPS*** |
| **EPA APPENDIX III** | | | | | | | | | | | | | | | | | | | | |
| Boron (µg/l) | 7440-42-8 | 6.0 | 10.6 | 47.3 | 42.7 | 6.8 | 12.1 | 10.8 | 32.1 | 8.9 | *700.0* | -- | ND | ND | 9.3 | 11.2 | 34.4 | *NS* | 690 | *700* |
| Calcium (µg/l) | 7440-70-2 | 27,300 | 79,900 | 192,000 | 181,000 | 17,900 | 10,100 | 33,600 | 40,600 | 159,000 | *NS* | *NS* | ND | ND | 83,400 | 2,880 | 7,800 | *NS* | 102,000 | *NS* |
| Chloride (µg/l) | 16887-00-6 | **264,000** | **342,000** | **1,230,000** | **1,270,000** | 174,000 | 18,000 | 15,300 | **411,000** | **685,000** | *250,000* | -- | ND | ND | **356,000** | 11,900 | 13,700 | *250,000* | 239,000 | *250,000* |
| Fluoride (µg/l) | 16984-48-8 | 130 | 130 | 220 | 220 | 420 | 520 | 180 | 260 | ND | *2,000* | -- | ND | ND | 130 | 100 | ND | *1,800* | 340 | *2,000* |
| pH* (standard units) | - | 6.6 | 6.7 | 7.6 | 7.1 | **6.4** | 6.9 | **6.4** | 6.6 | 6.8 | *6.5-8.5* | -- | N/A | N/A | 6.7 | 6.9 | 6.5 | *6.0-9.0* | 7.7 | *6.5-8.5* |
| Sulfate (µg/l) | 14808-79-8 | 19,600 | 10,500 | 230,000 | 12,900 | 3,900 | 3,100 | 214,000 | 38,000 | 5,700 | *250,000* | -- | ND | ND | 10.4 | 3,500 | 5,500 | *250,000* | 94,500 | *250,000* |
| Total Dissolved Solids (µg/l) | - | **628,000** | **770,000** | **2,700,000** | **2,530,000** | **513,000** | 194,000 | **689,000** | **982,000** | **1,130,000** | *500,000* | -- | ND | ND | **754,000** | 94,000 | 121,000 | *500,000* | **516,000** | *500,000* |
| **EPA APPENDIX IV** | | | | | | | | | | | | | | | | | | | | |
| Antimony (µg/l) | 7440-36-0 | ND | ND | **10.6** | **8.7** | ND | ND | ND | **5.5** | **8.1** | *1* | -- | ND | ND | ND | ND | ND | *5.6* | **10.7** | *1* |
| Arsenic (µg/l) | 7440-38-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *10* | -- | ND | ND | ND | ND | ND | *10* | **12** | *10* |
| Barium (ug/l) | 7440-39-3 | 302 | 129 | 230 | 578 | 86 | 91 | 108 | 208 | **1220** | *700* | -- | ND | ND | 137 | 59.8 | 53.0 | *1,000* | 177 | *700* |
| Beryllium (µg/l) | 7440-41-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | -- | ND | ND | ND | ND | ND | *6.5* | ND | *4* |
| Cadmium (µg/l) | 7440-43-9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *2* | -- | ND | ND | ND | ND | ND | *2* | ND | *2* |
| Chromium (µg/l) | 7440-47-3 | ND | ND | 5.7 | ND | ND | ND | ND | ND | ND | *10* | -- | ND | ND | ND | ND | ND | *50* | 9 | *10* |
| Cobalt (µg/l) | 7440-48-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | ND | ND | *3* | ND | *1* |
| Fluoride (µg/l) | 16984-48-8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *2,000* | -- | ND | ND | ND | ND | ND | *1,800* | ND | *2,000* |
| Lead (µg/l) | 7439-92-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *15* | -- | ND | ND | ND | ND | ND | *25* | ND | *15* |
| Lithium (µg/l) | 7439-93-2 | 36.8 | 28.4 | 117 | 217 | 18.3 | 9.7 | 41.2 | 20.7 | 37.6 | *NS* | *NS* | ND | ND | 28.3 | 1.5 | 1.1 | *NS* | 40 | *NS* |
| Mercury (µg/l) | 7439-97-6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1* | -- | ND | ND | ND | ND | ND | *0.012* | ND | *1* |
| Molybdenum (µg/l) | 7439-98-7 | ND | ND | 9.5 | 8.6 | ND | ND | ND | ND | ND | *NS* | *NS* | ND | ND | ND | ND | ND | *160* | 133 | *NS* |
| Selenium (µg/l) | 7782-49-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *5* | **246** | *20* |
| Thallium (µg/l) | 7440-28-0 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.28* | -- | ND | ND | ND | ND | ND | *0.24* | ND | *0.28* |
| Radium 226 (pCi/l) | 13982-63-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | *5 (combined)* | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| Radium 228 (pCi/l) | 15262-20-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *NS* | | ND | ND | ND | ND | ND | *NS* | ND | *NS* |
| **EPA APPENDIX I METALS** | | | | | | | | | | | | | | | | | | | | |
| Copper (µg/l) | 7440-50-8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *1,000* | -- | ND | ND | ND | ND | ND | *7* | ND | *1,000* |
| Nickel (µg/l) | 7440-02-0 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *100* | -- | ND | ND | ND | ND | ND | *88* | ND | *100* |
| Silver (µg/l) | 7440-22-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *20* | -- | ND | ND | ND | ND | ND | *0.06* | ND | *20* |
| Vanadium (µg/l) | 7440-62-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.3* | -- | ND | ND | ND | ND | ND | *NS* | **28** | *0.3* |
| Zinc (µg/l) | 7440-66-6 | ND | 10.2 | 113 | 12.5 | ND | 36.1 | ND | ND | 47.7 | *1,000* | -- | ND | ND | ND | ND | 14.2 | *50* | ND | *1,000* |
| **EPA APPENDIX I VOC'S** | | | | | | | | | | | | | | | | | | | | |
| Acetone (µg/l) | 67-64-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6,000* | -- | ND | ND | ND | ND | ND | *2,000* | ND | *6,000* |
| Bromodichloromethane (µg/l) | 75-27-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.6* | *80 (all THM's)* | ND | ND | ND | ND | ND | *NS* | ND | *0.6* |
| Bromoform (µg/l) | 75-25-2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *4* | | ND | ND | ND | ND | ND | *4.3* | ND | *4* |
| Chloroform (µg/l) | 67-66-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | | ND | ND | ND | ND | ND | *6* | ND | *70* |
| Dibromochloromethane (µg/l) | 124-48-1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *0.4* | | ND | ND | ND | ND | ND | *NS* | ND | *0.4* |
| Carbon Disulfide (µg/l) | 75-15-0 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *700* | -- | ND | ND | ND | ND | ND | *NS* | ND | *700* |
| Dibromomethane (µg/l) | 74-95-3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *70* | -- | ND | ND | ND | ND | ND | *47* | ND | *70* |
| 1,4-Dichlorobenzene (µg/l) | 106-46-7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | *6* | -- | ND | ND | ND | ND | ND | *63* | ND | *6* |

Notes:

1. Groundwater and surface water samples collected on April 5 through April 7, 2016 and analyzed for above parameters by Pace Analytical Laboratories
2. ND = below detection limits; NE = not established; NS = no standard; NT = not tested; VOC's = volatile organic compounds
3. NCGPS = North Carolina Groundwater Protection Standard (J-flagged data not considered)
4. Federal MCL = Federal Maximum Contaminant Level in drinking water (Federal MCL provided when no established NCGPS; or for further clarification as with THM's)
5. NCSWWS = North Carolina Surface Water and Wetland Standards (15A NCAC 02B) for Gulf Creek (SW-1) and Shaddox Creek (SW-2) which are both Class WS-IV Waters or are National Criteria per EPA
6. THM's = trihalomethanes (bromodichloromethane, bromoform, chloroform and dibromochloromethane) (all generally associated with the breakdown of chlorinated muncipal water in contact with natural water)
7. **Bold** and **shade** denotes above established NCGPS's or NCSWWS; µg/l = micrograms per liter; pCi/l - picocuries per liter
8. B = detected in method blank; J = estimated result <PQL (practical quantitation limit aka report limit (RL)) and >=MDL (method detection limit aka MDC)
9. pH was field tested by Pace Analytical Laboratories

# A

# Appendix A – Sampling and Field Logs

Charrah – Brickhaven

Round 4

01/04/16

Well Sweep

| Well ID | Static Water Level: (ft) |
|---|---|
| BG-1 | 10.05 |
| MW-5 | 14.70 |
| MW-6 | 6.57 |
| MW-7 | 15.60 |
| MW-8 | 35.87 |
| MW-1 | 58.05 |
| MW-2 | 32.78 |
| MW-3 | 11.92 |
| MW-4 | 10.15 |

Charah – Brickhaven

Round 5

02/16/16

Well Sweep

| Well ID | Static Water Level (ft) | Total Depth (ft) |
|---|---|---|
| BG-1 | 9.25 | 43.78 |
| MW-1 | 57.32 | 75.55 |
| MW-2 | 31.15 | 48.13 |
| MW-3 | 10.25 | 43.60 |
| MW-4 | 5.77 | 25.74 |
| MW-5 | 16.17 | 46.96 |
| MW-6 | 6.35 | 27.93 |
| MW-7 | 16.40 | 17.64 |
| MW-8 | 35.92 | 49.68 |

Charrah

Brickhaven

Moncure, NC

Well Sweep

04/05/2016

| **Well ID:** | **Total Depth (ft):** | **Static Water Level (ft):** |
|---|---|---|
| BG-1 | 43.78 | 9.73 |
| MW-1 | 75.55 | 58.25 |
| MW-2 | 48.13 | 28.80 |
| MW-3 | 43.60 | 10.20 |
| MW-4 | 25.74 | 8.79 |
| MW-5 | 46.96 | 24.80 |
| MW-6 | 27.93 | 6.97 |
| MW-7 | 17.64 | 16.05 |
| MW-8 | 49.68 | 36.98 |

Notes: MW-2, MW-4, and MW-6 continue to produce high turbid samples ( ~ 20 ntu). MW-7 continues to not achieve the designated sample volume to satisfy all analysis.

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## Field Data Sheet

Client: NDR Location: Monroe, NC Project Name/#: Bickhaven - Chemrak

Name and Afiliation (Sampler(s): C.S. J.A / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-4 Well Locked: ~~YES~~ NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~22.0~~ 25.74 ft (B 01/04/16) Multi Factor*: ~~2.5417~~ .163 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 10.15 ft Casing Volume: 2.5417 gallons

Height of Water Column: 15.59 ft Cal. 3 Volumes: 7.6235 gallons

### Purge Information

Date Purged: 01 / 04 / 16 Start Time: 1450 Finish: 1515 Purge Rate: 100mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 mL ~~gallons~~

### Sampling Information

Date Collected: 01/04/16 Time Collected: 1515 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 11.3 Time: 1515 Turbidity (ntu): 3.81 Time: 1515

Sample pH (s.u.): 6.38 Time: Diss Oxy (mg/L): 0.33 Time: 1515

Specific Cond. (uS): 1532 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): -28.3 Time: Other: Iron 2.5mg/L Time: 1515

Odor: None Time: Appearance: Clear w/ particles

### General/Weather Observations

39°F Cold, wind 10mph.

Sampler Signature/Date: [signature] / 01/04/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other (water level (ft)) |
|---|---|---|---|---|---|---|---|---|
| 1455 | 6.42 | 1558 | -38.2 | 2.93 | 0.74 | 11.2 | 500mL | 10.53 |
| 1500 | 6.41 | 1563 | -39.3 | 1.52 | 0.54 | 11.7 | 1000mL | 10.73 |
| 1505 | 6.40 | 1558 | -38.2 | 1.33 | 0.35 | 11.7 | 1500mL | 10.79 |
| 1510 | 6.39 | 1552 | -36.7 | 1.60 | 0.34 | 11.7 | 2000mL | Stable |
| 1515 | 6.38 | 1532 | -28.3 | 3.81 | 0.33 | 11.3 | 2500mL | Stable |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Brickhaven-Channel

Name and Afiliation (Sampler(s)): C.S. S.A/ PAC

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-5 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~44.0~~ 46.96 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 14.70 ft Casing Volume: 5.25838 gallons

Height of Water Column: 32.26 ft Cal. 3 Volumes: 15.77514 gallons

### Purge Information

Date Purged: 01/04/16 Start Time: 1300 Finish: 1325 Purge Rate: 100 mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 mL gallons

### Sampling Information

Date Collected: 01/04/16 Time Collected: 1325 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3 |
| | | Metals x2, Sebo x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 11.7 Time: 1325 Turbidity (ntu): 2.32 Time: 1325

Sample pH (s.u.): 7.00 Time: Diss Oxy (mg/L): 1.01 Time: 1325

Specific Cond. (uS): 482.9 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 181.1 Time: Other: Iron 0.0 mg/L Time: 1325

Odor: None Time: Appearance: Clear

### General/Weather Observations

43°F Cloudy, Cold. Outside fence near water storage (leachate) No recharge

Sampler Signature/Date: [signature] / 01/04/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1305 | 7.00 | 485.0 | 189.2 | 1.41 | 1.27 | 12.8 | 500 mL | 15.18 |
| 1310 | 7.00 | 484.3 | 187.1 | 1.48 | 1.10 | 12.7 | 1000 mL | 16.20 |
| 1315 | 7.01 | 486.3 | 184.2 | 2.10 | 1.03 | 11.9 | 1500 mL | 16.70 |
| 1320 | 7.00 | 483.3 | 182.7 | 1.05 | 1.02 | 12.0 | 2000 mL | 17.10 |
| 1325 | 7.00 | 482.9 | 181.1 | 2.32 | 1.01 | 11.7 | 2500 mL | 17.33 |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Brickhaven - Chestnut

Name and Afiliation (Sampler(s)): C.J. J.A / Pace

Name and Afiliation (Inspector): —

**Well Information**

Well ID: Leachate-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ____/____/____ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 01/04/16 Time Collected: 1345 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride / Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 12.7 Time: 1345 Turbidity (ntu): 79.71 Time: 1345

Sample pH (s.u.): 7.66 Time: | Diss Oxy (mg/L): 5.50 Time: 1345

Specific Cond. (uS): 47.4 Time: | Res. Cl (mg/L): — Time: —

ReDox (mV): 175.3 Time: | Other: Iron Time: 1345

Odor: None Time: | Appearance: Cloudy

**General/Weather Observations**

Cold, 40°F, wind - 5-10mph Inside concrete wall, Sign JHA to enter.

Sampler Signature/Date: [signature] / 01/04/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
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## Field Data Sheet

Client: HDR Location: Mentone, NC Project Name/#: Brickhaven - Chatham

Name and Afiliation (Sampler(s)): C.S., J.A/PAE

Name and Afiliation (Inspector): —

### Well Information

Well ID: BG-1 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~71.0~~ 43.78 ft (as 01/04/16) ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 10.05 ft Casing Volume: 5.4869 gallons

Height of Water Column: ~~43.78~~ 33.63 (as 01/04/16) ft Cal. 3 Volumes: 16.4507 gallons

### Purge Information

Date Purged: 01 / 04 / 16 Start Time: 1127 Finish: 1152 Purge Rate: 100 mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 mL ~~gallons~~

### Sampling Information

Date Collected: 01/04/16 Time Collected: 1152 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride / Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 10.5 Time: 1152 Turbidity (ntu): 1.17 Time: 1152

Sample pH (s.u.): 6.5 Time: Diss Oxy (mg/L): 2.89 Time: 1152

Specific Cond. (uS): 1201 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 247.8 Time: Other: Iron: 0.0 mg/L Time: 1152

Odor: None Time: Appearance: Clear

### General/Weather Observations

40°F Near front gate. A lot of traffic. No rainage. Cloudy. Cold

Sampler Signature/Date: [signature] / 01/04/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1132 | 6.41 | 1198 | 216.7 | 2.38 | 3.10 | 10.8 | 500 mL | 10.58 |
| 1137 | 6.48 | 1203 | 223.2 | ~~2.45~~ | 2.93 | 10.0 | 1000 mL | 10.75 |
| 1142 | 6.50 | 1208 | 232.9 | 1.42 | ~~3.18~~ 2.90 | 10.4 | 1500 mL | 10.85 |
| 1147 | 6.50 | 1193 | 243.8 | 1.27 | 2.91 | 10.2 | 2000 mL | 10.90 |
| 1152 | 6.51 | 1201 | 247.8 | 1.17 | 2.89 | 10.5 | 2500 mL | Stable |

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## Field Data Sheet

Client: AR Location: Monroe, NC Project Name/#: Brickhaven-Creek

Name and Afiliation (Sampler(s)): CS, JJ

Name and Afiliation (Inspector): —

**Well Information**

Well ID: SW-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ___/___/___ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 01/04/16 Time Collected: 0935 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228x3, |
| | | Metals x2, 8260x3, |
| | | Fluoride 903 |
| | | Chloride/Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 5.7 Time: 0935 Turbidity (ntu): 171.4 Time: 0935

Sample pH (s.u.): 6.17 Time: — Diss Oxy (mg/L): 8.25 Time: 0935

Specific Cond. (uS): 94.9 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 140.5 Time: — Other: Iron 0.0mg/L Time: 0935

Odor: None Time: — Appearance: Muddy orange

**General/Weather Observations**

Area (creek) more inundated by water. 39°F

Sampler Signature/Date: [signature] / 01/04/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Brickshaven - church

Name and Afiliation (Sampler(s)): C.S. J.A/PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: GW-2 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: 01 / 04 / 16 Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 01/04/16 Time Collected: 0855 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228x3 |
| | | metals x2, 8260x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 6.4 Time: 0855 Turbidity (ntu): 23.33 Time: 0855

Sample pH (s.u.): 6.15 Time: _____ Diss Oxy (mg/L): 1.88 Time: 0855

Specific Cond. (uS): 124.0 Time: _____ Res. Cl (mg/L): — Time: —

ReDox (mV): 59.1 Time: _____ Other: Iron: 0.0 mg/L Time: 0855

Odor: None Time: _____ Appearance: light brown tint

**General/Weather Observations**

Flooded area, water mark waist high on trees, film on water, 34°F

Sampler Signature/Date: [signature] / 01/04/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | 23.33 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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## Field Data Sheet

Client: HDR Location: Mercure, NC Project Name/#: Charon - Brickhaven

Name and Afiliation (Sampler(s)): C.S, S.A / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-3 Well Locked: YES NO - Broken lock (#2 lock)

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~40~~ 43.60 ft ft 01/05/16 Multi Factor*: 6.30 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 11.92 ft Casing Volume: 5.16384 gallons

Height of Water Column: 31.68 ft Cal. 3 Volumes: 15.49152 gallons

### Purge Information

Date Purged: 01/05/16 Start Time: 1415 Finish: 1440 Purge Rate: 100mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/05/16 Time Collected: 1440 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | Fluoride TDS |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 12.4 Time: 1440

Sample pH (s.u.): 7.3 Time: —

Specific Cond. (uS): 4248 Time: —

ReDox (mV): 136.0 Time: —

Odor: None Time: —

Turbidity (ntu): 5.69 Time: 1440

Diss Oxy (mg/L): 2.07 Time: 1440

Res. Cl (mg/L): — Time: —

Other: Iron. Time: 1440

Appearance: Clear

### General/Weather Observations

Sunny. Calm. Wind: 2-3mph. 40°F. No rain/snow

Sampler Signature/Date: [signature] / 01/05/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other: water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1420 | 7.31 | 4261 | 143.4 | 4.96 | 1.90 | 13.1 | 500mL | 12.30 |
| 1425 | 7.34 | 4244 | 141.7 | 5.61 | 2.08 | 11.7 | 1000mL | 14.19 |
| 1430 | 7.34 | 4231 | 139.7 | 5.13 | 2.06 | 12.7 | 1500mL | 14.50 |
| 1435 | 7.34 | 4248 | 137.1 | 6.15 | 2.08 | 12.4 | 2000mL | 15.12 |
| 1440 | 7.33 | 4248 | 136.0 | 5.69 | 2.07 | 12.4 | 2500mL | ~~15.90~~ 01/05/16 15.53 |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: ~~[illegible]~~ Brownfields

Name and Afiliation (Sampler(s)): CS, J.H./Pace Check CS 01/05/16

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-6 Well Locked: YES NO - Broken Lock

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 27.93 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 6.57 ft Casing Volume: 3.48168 gallons

Height of Water Column: 21.36 ft Cal. 3 Volumes: 10.44504 gallons

### Purge Information

Date Purged: 01 / 05 / 16 Start Time: 1015 Finish: 1040 Purge Rate: 100 mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/05/16 Time Collected: 1040 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Sodium 22Na/226Ra, |
| | | metals x2, 8260x3, |
| | | TDS, Fluoride |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 10.7 Time: 1040 Turbidity (ntu): 3.63 Time: 1040

Sample pH (s.u.): 6.67 Time: Diss Oxy (mg/L): 0.64 Time: 1040

Specific Cond. (uS): 1530 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 138.3 Time: Other: Iron: 0.0 mg/L Time: 1040

Odor: None Time: Appearance: Clear

### General/Weather Observations

Cold 35°F. Wind 10 mph, well down gradient

Sampler Signature/Date: [signature] / 01/05/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1020 | 6.50 | 1540 | 147.7 | 1.21 | 0.88 | 11.2 | 500 mL | 7.32 |
| 1025 | 6.63 | 1546 | 144.9 | 3.24 | 0.73 | 11.1 | 1000 mL | 7.41 |
| 1030 | 6.66 | 1543 | 143.8 | 3.27 | 0.66 | 11.8 | 1500 mL | 7.48 |
| 1035 | 6.66 | 1540 | 142.7 | 3.67 | 0.65 | 10.8 | 2000 mL | Stable |
| 1040 | 6.67 | 1530 | 138.3 | 3.63 | 0.64 | 10.7 | 2500 mL | Stable |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: ~~Cherokee~~ - Bi-Weekly
Name and Afiliation (Sampler(s)): C.S. / J.A / PACE Cherokee 01/05/16
Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-7 Well Locked: YES NO
Well Diameter: 2" Construction: PVC Steel Stainless Steel
Total Well Depth: ~~15.0~~ 17.64 ft ft 01/05/16 Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]
Static Water Level: ~~15.60~~ ~~15.60~~ ft 15.60 ft 01/05/16 Casing Volume: 0.33252 gallons
Height of Water Column: 2.04 ft 01/05/16 Cal. 3 Volumes: 0.99756 gallons

### Purge Information

Date Purged: 01 / 05 / 16 Start Time: 1155 Finish: 1220 Purge Rate: 100 mL/min
Purging Method: Peristaltic Total Volume Purged: 2500 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/05/16 Time Collected: 1220 am pm
Sampling Equipment Used: Gravity

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 9056 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 9.7 Time: 1220 Turbidity (ntu): 1.26 Time: 1220
Sample pH (s.u.): 6.87 Time: Diss Oxy (mg/L): 2.89 Time: 1220
Specific Cond. (uS): 1962 Time: Res. Cl (mg/L): — Time: —
ReDox (mV): 126.4 Time: Other: Iron: 0.0 mg/L Time: 1220
Odor: None Time: Appearance: Clear

### General/Weather Observations

Cold, 36°F. Near retainment wall, construction below. No recharge little $H_2O$ dry at end of ~~sampling~~ sampling

Sampler Signature/Date: [signature] / 01/05/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1200 | 6.88 | 1934 | 109.7 | 3.59 | 3.20 | 9.7 | 500 mL | 15.95 |
| 1205 | 6.88 | 1931 | 119.6 | 1.96 | 3.18 | 9.5 | 1000 mL | 15.98 |
| 1210 | 6.88 | 1939 | 119.7 | 1.30 | 2.98 | 9.6 | 1500 mL | 16.01 |
| 1215 | 6.87 | 1938 | 124.1 | 1.25 | 2.89 | 9.7 | 2000 mL | 16.06 |
| 1220 | 6.87 | 1962 | 126.4 | 1.26 | 2.89 | 9.7 | 2500 mL | 16.10 |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Chemours - Brickhaven

Name and Afiliation (Sampler(s)): CS, JA/PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-1 Well Locked: YES NO - Broken lock

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~72.0~~ 75.55 ft 01/06/16 Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 58.05 ft Casing Volume: 2.8525 gallons

Height of Water Column: 17.50 ft Cal. 3 Volumes: 8.5575 gallons

### Purge Information

Date Purged: 01 / 06 / 16 Start Time: 1140 Finish: 1340 Purge Rate: 100 mL/min.

Purging Method: Monsoon Total Volume Purged: 12000 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/06/16 Time Collected: 1340 am pm

Sampling Equipment Used: Gear

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 8260 x3, |
| | | Fluoride, TDS, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 15.9 Time: 1340 Turbidity (ntu): 10.00 Time: 1340

Sample pH (s.u.): 6.71 Time: Diss Oxy (mg/L): 0.19 Time:

Specific Cond. (uS): 1794 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 103 Time: Other: Iron: 0.0 mg/L Time: 1340

Odor: None Time: Appearance: Cloudy → Clear

### General/Weather Observations

Cold. 37°F. Wind: 2-5mph. Good recharge. Top of hill overlooking Ash cell.

Sampler Signature/Date: [signature] / 01/06/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1145 | 7.29 | 740 | -36.3 | 331.7 | 1.60 | 14.1 | 500mL | 58.20 |
| 1150 | 7.20 | 760 | -48.4 | 512.7 | 1.66 | 14.5 | 1000mL | 58.22 |
| 1200 | 7.19 | 664 | -45.9 | 493.6 | 1.21 | 14.5 | 2000mL | Stable |
| 1210 | 7.19 | 620 | -43.9 | 335.3 | 0.77 | 16.1 | 3000mL | |
| 1220 | 7.15 | 630 | -38.4 | 248.7 | 0.44 | 16.0 | 4000mL | |

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Client: HDR

Location: Monroe, NC

Project: Church - Brickhaven

Well ID: MW-1

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1230 | 7.11 | 686 | -36.8 | 128.1 | 0.30 | 16.0 | 500mL | 58.25 |
| 1240 | 7.00 | 907 | -28.2 | 73.96 | 0.22 | 15.9 | 600mL | Stable |
| 1250 | 6.87 | 1214 | -13.5 | 37.92 | 0.19 | 15.7 | 700mL | |
| 1300 | 6.74 | 1551 | 2.4 | 30.73 | 0.17 | 15.9 | 800mL | |
| 1310 | 6.72 | 1641 | 7.1 | 26.87 | 0.17 | 15.8 | 900mL | |
| 1320 | 6.70 | 1717 | 10.0 | 15.02 | 0.19 | 16.4 | 1000mL | |
| 1330 | 6.71 | 1774 | 10.7 | 12.12 | 0.19 | 16.2 | 11,000mL | |
| 1340 | 6.71 | 1794 | 10.3 | 10.00 | 0.19 | 15.9 | 12,000mL | 2 hr mark |

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## Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Chevron - Brickhaven

Name and Afiliation (Sampler(s)): C.S., J.A / CAE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-2 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: ~~45.0~~ 48.13 ft 01/05/16 Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 32.78 ft Casing Volume: 2.50205 gallons

Height of Water Column: 15.35 ft Cal. 3 Volumes: 7.50615 gallons

### Purge Information

Date Purged: 01 / 06 / 16 Start Time: 1500 Finish: 1720 Purge Rate: 100 mL/min

Purging Method: Monsoon Total Volume Purged: 14000 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/06/16 Time Collected: 1720 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3 |
| | | Metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 8.7 Time: 1720 Turbidity (ntu): 9.95 Time: 1720

Sample pH (s.u.): 7.95 Time: Diss Oxy (mg/L): 4.06 Time: 1720

Specific Cond. (uS): 4683 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 24.1 Time: Other: Iron: 0.0 mg/L Time: 1720

Odor: None Time: Appearance: ~~Clear~~ Cloudy → Clear 01/06/16

### General/Weather Observations

Cool 43°F. Flooded around well. No recharge

Sampler Signature/Date: [signature] / 01/06/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1505 | 7.63 | 4590 | 23.4 | 60.24 | 3.60 | 13.1 | 500mL | 33.80 |
| 1515 | 7.72 | 4590 | 45.2 | 79.46 | 3.65 | 11.3 | 1500mL | 35.08 |
| 1525 | 7.73 | 4592 | 45.6 | 102.7 | 3.67 | 11.1 | 2500mL | 36.30 |
| 1535 | 7.76 | 4597 | 49.9 | 97.59 | 3.75 | 11.4 | 3500mL | 36.40 |
| 1545 | 7.92 | 4614 | 46.2 | 83.59 | 3.80 | 10.4 | 4500mL | 36.50 |

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Client: HDR

Location: Monroe, NC

Project: Charah - Buckhaven

Well ID: MW-2

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | water level: (A) |
| 1555 | 7.86 | 4639 | 41.8 | 59.50 | 3.88 | 10.5 | 5500mL | 36.58 |
| 1605 | 7.89 | 4663 | 38.3 | 47.18 | 3.76 | 9.5 | 6500mL | 36.70 |
| 1615 | 7.90 | 4644 | 33.7 | 41.81 | 3.74 | 9.4 | 7500mL | 37.12 |
| 1625 | 7.90 | 4643 | 31.6 | 35.64 | 4.08 | 10.3 | 8500mL | 37.40 |
| 1635 | 7.93 | 4666 | 28.9 | 32.21 | 3.93 | 10.0 | 9500mL | 37.80 |
| 1645 | 7.94 | 4675 | 25.8 | 24.63 | 3.84 | 9.4 | 10,500mL | |
| 1655 | 7.94 | 4673 | 25.0 | 19.78 | 3.99 | 8.9 | 11,500mL | |
| 1705 | 7.94 | 4683 | 24.7 | 17.01 | 3.95 | 8.7 | 12,500 | 2 hr mark |
| 1710 | 7.96 | 4671 | 24.0 | 11.73 | 4.10 | 8.6 | 13000mL | 38.75 |
| 1715 | 7.95 | 4680 | 24.1 | 10.01 | 4.09 | 8.7 | 13500mL | 39.00 |
| 1720 | 7.95 | 4683 | 24.1 | 9.95 | 4.08 | 8.7 | 14000mL | 39.30 |

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## Field Data Sheet

Client: ADR Location: Monroe, NC Project Name/#: Brickhaven ~~Church~~ Church 01/05/16

Name and Afiliation (Sampler(s)): G.S., J.A. / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-8 Well Locked: YES NO

Well Diameter: 2 Construction: PVC Steel Stainless Steel

Total Well Depth: ~~46.0~~ 49.68 ft 01/05/16 ft Multi Factor*: .16 30 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 35.87 ft Casing Volume: 2.25103 gallons

Height of Water Column: 13.81 ft Cal. 3 Volumes: 6.75309 gallons

### Purge Information

Date Purged: 01 / 06 / 16 Start Time: 0835 Finish: 1050 Purge Rate: 100 mL/min

Purging Method: Monsoon Total Volume Purged: 13,500 ~~gallons~~ mL

### Sampling Information

Date Collected: 01/06/16 Time Collected: 1050 am pm

Sampling Equipment Used: 65gb

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228x3, |
| | | Metals x2, 8260x3, |
| | | ~~TDS~~ Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 13.9 Time: 1050 Turbidity (ntu): 7.69 Time: 1050

Sample pH (s.u.): 6.81 Time: 1050 Diss Oxy (mg/L): 1.15 Time: 1050

Specific Cond. (uS): 3066 Time: 1050 Res. Cl (mg/L): — Time: —

ReDox (mV): 85.0 Time: 1050 Other: Iron: 0.0 mg/L Time: 1050

Odor: None Time: 1050 Appearance: Cloudy (start) → Clear (finish)

### General/Weather Observations

Cold. 34°F. Down gradient. wind: 2-5 mph.

Sampler Signature/Date: [signature] / 01/06/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other water level: (ft) |
|---|---|---|---|---|---|---|---|---|
| 0840 | 6.45 | 4638 | 176.0 | 127.8 | 2.99 | 12.0 | 500 mL | 36.90 |
| 0850 | 6.64 | 4616 | 145.8 | 71.92 | 2.89 | 10.3 | 1500 mL | 37.00 |
| 0900 | 6.65 | 4442 | 133.4 | 55.75 | 2.60 | 11.2 | 2500 mL | Stable |
| 0910 | 6.70 | 4284 | 125.8 | 48.79 | 2.44 | 10.4 | 3500 mL | ↓ |
| 0920 | 6.72 | 4142 | 121.5 | 42.94 | 2.16 | 11.1 | 4500 mL | ↓ |

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Client: HDR

Location: Monroe, NC

Project: Church - Brashaven

Well ID: MW-8

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 0930 | 6.72 | 3967 | 118.9 | 26.46 | 2.16 | 11.7 | 3500 ml | 37.00 |
| 0940 | 6.74 | 3906 | 116.9 | 23.48 | 2.01 | 11.2 | 6500 ml | Stable |
| 0950 | 6.75 | 3787 | 117.1 | 22.97 | 1.89 | 10.3 | 7500 ml | Stable |
| 1000 | 6.74 | 3635 | 113.2 | 23.03 | 1.65 | 13.8 | 8500 ml | |
| 1010 | 6.75 | 3554 | 107.4 | 18.33 | 1.58 | 13.9 | 9500 ml | |
| 1020 | 6.78 | 3314 | 99.0 | 13.34 | 1.32 | 14.0 | 10500 ml | |
| 1030 | 6.79 | 3195 | 94.5 | 12.49 | 1.22 | 14.0 | 11500 ml | |
| 1040 | 6.80 | 3108 | 89.5 | 11.01 | 1.15 | 14.2 | 12500 ml | 2 hr overK |
| 1045 | 6.81 | 3086 | 86.5 | 9.52 | 1.16 | 13.9 | 13000 ml | Stable |
| 1050 | 6.81 | 3066 | 85.0 | 7.69 | 1.19 | 13.9 | 13500 ml | |

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## Field Data Sheet

Client: WAR Location: Moncure, NC Project Name/#: Cheraw – Blackriver

Name and Afiliation (Sampler(s): C.S / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: SW-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ft Casing Volume: _____ gallons

Height of Water Column: _____ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ____/____/____ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 02/16/16 Time Collected: 1650 am pm

Sampling Equipment Used: _____

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 12.9 Time: 1650 Turbidity (ntu): 1000+ Time: 1650

Sample pH (s.u.): 7.58 Time: Diss Oxy (mg/L): 8.34 Time: 1650

Specific Cond. (uS): 82.7 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 191.2 Time: Other: Iron: ND Time: 1650

Odor: None Time: Appearance: Muddy, Storm-water

**General/Weather Observations**

Flooded, muddy stream. Cloudy. 55°F. Wind 2-3 mph

Sampler Signature/Date: [signature] 02/16/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| 1650 | 7.58 | 82.7 | 191.2 | 1000+ | 8.34 | 12.9 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church - Buckhaven Road's

Name and Afiliation (Sampler(s)): C.S / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-3 Well Locked: YES NO - Broken lock

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 43.60 ft Multi Factor*: 0.1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 10.25 ft Casing Volume: ~~41.92~~ 5.43 gallons 02/16/16

Height of Water Column: 33.35 ft Cal. 3 Volumes: 16.30 gallons

### Purge Information

Date Purged: 02 / 16 / 16 Start Time: 1220 Finish: 1245 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 0.66 gallons

### Sampling Information

Date Collected: 02/16/16 Time Collected: 1245 am pm

Sampling Equipment Used: Peristaltic

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 15.9 Time: 1245 Turbidity (ntu): 0.84 Time: 1245

Sample pH (s.u.): 7.22 Time: Diss Oxy (mg/L): 0.58 Time: 1245

Specific Cond. (uS): 4442 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 290.8 Time: Other: Iron: 0.0mg/L Time: 1245

Odor: None Time: Appearance: Clear

### General/Weather Observations

Partly Cloudy / Sunny, 54°F, wind 5 mph, No rechargE

Sampler Signature/Date: [signature] 02/16/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1225 | 7.20 | 4436 | 293.4 | 1.87 | 0.57 | 15.6 | 50ml | 11.50 |
| 1230 | 7.22 | 4440 | 293.1 | 1.86 | 0.56 | 15.9 | 100ml | 12.50 |
| 1235 | 7.19 | 4436 | 291.9 | 1.79 | 0.57 | 15.9 | 150ml | 13.55 |
| 1240 | 7.21 | 4439 | 291.3 | 1.27 | 0.58 | 15.9 | 200ml | 14.59 |
| 1245 | 7.22 | 4442 | 290.8 | 0.84 | 0.58 | 15.9 | 250ml | 15.45 |

## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Charah-Brickhaven Pond 5

Name and Afiliation (Sampler(s)): C.S / PAE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-4 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 25.74 ft Multi Factor*: 0.1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 5.77 ft Casing Volume: 3.25 gallons

Height of Water Column: 19.97 ft Cal. 3 Volumes: 9.76 gallons

### Purge Information

Date Purged: 02 / 16 / 16 Start Time: 1335 Finish: 1635 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 4.75 gallons

### Sampling Information

Date Collected: 02/16/16 Time Collected: 1635 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, VOC x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 16.3 Time: 1635 Turbidity (ntu): 9.92 Time: 1635

Sample pH (s.u.): 6.33 Time: Diss Oxy (mg/L): 0.12 Time: 1635

Specific Cond. (uS): 1331 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 34.6 Time: Other: Iron: 1.0 mg/L Time: 1633

Odor: None Time: Appearance: Clear w/ Floc (orange)

### General/Weather Observations

Sunny 55°F wind 5-10 mph 3 hr mark. Good recharge

Sampler Signature/Date: [signature] / 02/16/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water level (ft) |
| 1340 | 6.47 | 1413 | 23.0 | 22.29 | 0.17 | 16.2 | 500 ml | 10.00 |
| 1345 | 6.45 | 1412 | 30.6 | 15.40 | 0.17 | 15.5 | 1000 ml | |
| 1355 | 6.37 | 1367 | 21.4 | 32.10 | 0.11 | 16.3 | 2000 ml | Drywle particles |
| 1405 | 6.35 | 1325 | 37.0 | 32.33 | 0.29 | 16.3 | 3000 ml | 16.50 |
| 1415 | 6.35 | 1326 | 37.8 | 26.29 | 0.20 | 16.2 | 4000 ml | stable |

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Client: HDR

Location: Monroe, NC

Project: Charah - Brickhaven Round 5

Well ID: MW-4

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4630 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1425 | 6.33 | 1327 | 36.6 | 25.91 | 0.11 | 16.1 | 500ml | Stable (10.50) |
| 1435 | 6.33 | 1330 | 36.1 | 23.52 | 0.11 | 16.2 | 600ml | |
| 1440 | 6.33 | 1331 | 34.6 | 18.63 | 0.12 | 16.3 | 650ml | |
| 1450 | STABLE | — | — | 15.62 | STABLE | — | ~~750ml~~ | |
| 1500 | STABLE | — | — | 14.12 | STABLE | — | 850ml | — |
| 1510 | | | | 11.26 | | | 950ml | |
| 1520 | | | | 10.87 | | | 1050ml | |
| 1530 | | | | 10.45 | | | 1150ml | |
| 1540 | | | | 14.27 | | | 1250ml | |
| 1550 | | | | 13.41 | | | 1350ml | |
| 1600 | | | | 13.11 | | | 1450ml | |
| 1610 | | | | 12.47 | | | 1550ml | |
| 1620 | | | | 11.92 | | | 1650ml | |
| 1630 | | | | 10.12 | | | 1750ml | |
| 1635 | | | | 8.95 | | | 1800ml | |
| 3½ mark | | | | 9.92 | | | | |

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## Field Data Sheet

Client: HDR Location: Mooresboro, NC Project Name/#: Cherryh - Bickhaven Round 5

Name and Afiliation (Sampler(s)): C.S / PACE

Name and Afiliation (Inspector): ___

### Well Information

Well ID: MW-5 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 46.96 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 16.17 ft Casing Volume: 5.01 gallons

Height of Water Column: 30.79 ft Cal. 3 Volumes: 15.05 gallons

### Purge Information

Date Purged: 02/16/16 Start Time: 1035 Finish: 1100 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 0.52 gallons

### Sampling Information

Date Collected: 02/16/16 Time Collected: 1100 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x2, |
| | | metals x2, TDS |
| | | Fluoride, chloride, sulfate, |
| | | 8260 x3 |

### Field Measurements/Observations

Sample Temp (°C): 14.6 Time: 1100

Sample pH (s.u.): 7.09 Time: ___

Specific Cond. (uS): ~~14~~ 486.3 Time: ___

ReDox (mV): 293.3 Time: ___

Odor: None Time: ___

Turbidity (ntu): 0.97 Time: 1100

Diss Oxy (mg/L): 0.74 Time: 1100

Res. Cl (mg/L): — Time: —

Other: Iron: 0.0 mg/L Time: 1100

Appearance: Clear

### General/Weather Observations

Wind: 5-10 mph, partly cloudy/sunny 54°F, No rainfall

Sampler Signature/Date: [signature] / 02/16/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed (ml) | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1040 | 7.07 | 487.9 | 296.0 | 0.70 | 0.72 | 14.3 | 500 | 17.90 |
| 1045 | 7.06 | 487.9 | 294.8 | 0.85 | 0.73 | 14.3 | 1000 | 18.50 |
| 1050 | 7.07 | 487.7 | 294.3 | 0.96 | 0.74 | 14.4 | 1500 | 19.75 |
| 1100 | 7.09 | 486.3 | 293.3 | 0.97 | 0.74 | 14.6 | 2000 ml | 21.50 |
| | | | | | | | | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Chowan - Brickhaven Round 5

Name and Afiliation (Sampler(s)): GS / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: B6-1 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 43.78 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 9.25 ft Casing Volume: 5.62 gallons

Height of Water Column: 34.53 ft Cal. 3 Volumes: 16.88 gallons

### Purge Information

Date Purged: 02/16/16 Start Time: 0920 Finish: 0945 Purge Rate: 100 mL/min

Purging Method: Peristaltic Total Volume Purged: 0.66 gallons

### Sampling Information

Date Collected: 02/16/16 Time Collected: 0945 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228x3, |
| | | metals x2, 8260x3, |
| | | Fluoride, TDS |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 14.5 Time: 0945 Turbidity (ntu): 0.58 Time: 0945

Sample pH (s.u.): 6.52 Time: Diss Oxy (mg/L): 1.47 Time: 0945

Specific Cond. (uS): 1161 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 383.0 Time: Other: Iron: 0.0 mg/L Time: 0945

Odor: None Time: Appearance: Clear

### General/Weather Observations

Rain. Fog. 58°F. Near gate. overcast

Sampler Signature/Date: [signature] / 02/16/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other (water level) (ft) |
|---|---|---|---|---|---|---|---|---|
| 0925 | 6.56 | 1175 | 370.6 | 0.72 | 1.74 | 14.5 | 500mL | 10.13 |
| 0930 | 6.55 | 1166 | 375.9 | 0.77 | 1.63 | 14.4 | 1000mL | 10.21 |
| 0935 | 6.54 | 1165 | 377.9 | 0.77 | 1.49 | 14.5 | 1500mL | Stable |
| 0940 | 6.53 | 1161 | 381.9 | 0.59 | 1.47 | 14.5 | 2000mL | |
| 0945 | 6.52 | 1161 | 383.0 | 0.58 | 1.47 | 14.5 | 2500mL | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church – Brickhaven Round 5

Name and Afiliation (Sampler(s)): CS/CAE

Name and Afiliation (Inspector): —

### Well Information

Well ID: Leachate-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ft Casing Volume: _____ gallons

Height of Water Column: _____ft Cal. 3 Volumes: _____ gallons

### Purge Information

Date Purged: ____/____/____ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

### Sampling Information

Date Collected: 02/16/16 Time Collected: 1050 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228x3, |
| | | metals x2, VOC 8260 x3, |
| | | Fluoride, Chloride/ |
| | | sulfate, TDS |

### Field Measurements/Observations

Sample Temp (°C): 8.5 Time: 1050 Turbidity (ntu): 29.33 Time: 1050

Sample pH (s.u.): 7.25 Time: — Diss Oxy (mg/L): 8.73 Time: 1050

Specific Cond. (uS): 483.2 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 268.0 Time: — Other: Iron 0.0mg/L Time: 1050

Odor: None Time: — Appearance: Clear → muddy

### General/Weather Observations

Partly Cloudy/Sunny, 54°F, Wind 5-10mph, Clear → muddy at end of sample.

Sampler Signature/Date: [signature] / 02/16/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church - Brickhaven (Round 5)

Name and Afiliation (Sampler(s)): C.S / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-1 Well Locked: YES NO - Broken Lock

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 75.55 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 57.32 ft Casing Volume: 2.97 gallons

Height of Water Column: 18.23 ft Cal. 3 Volumes: 8.91 gallons

**Purge Information**

Date Purged: 02 / 17 / 16 Start Time: 1230 Finish: 1345 Purge Rate: 100 mL/min

Purging Method: monsoon Total Volume Purged: 2.0 gallons

**Sampling Information**

Date Collected: 02/17/16 Time Collected: 1345 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride / Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 17.4 Time: 1345 Turbidity (ntu): 8.91 Time: 1345

Sample pH (s.u.): 6.84 Time: — Diss Oxy (mg/L): 0.13 Time: 1345

Specific Cond. (uS): 932 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 25.1 Time: — Other: Iron: 0.0 mg/L Time: 1345

Odor: None Time: — Appearance: Dirty → Duplicate

**General/Weather Observations**

Sunny. 52°F. Wind: 2-5 mph. MW-1 Dup: 1400

Sampler Signature/Date: [signature] / 02/17/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1235 | 7.29 | 578.1 | -18.8 | 106.1 | 0.22 | 17.0 | 500mL | 58.30 |
| 1245 | 7.09 | 630 | -4.2 | 85.55 | 0.09 | 17.2 | 1500mL | Stable |
| 1255 | 6.96 | 765 | 6.1 | 54.79 | 0.09 | 17.3 | 2500mL | |
| 1305 | 6.94 | 7~~[illegible]~~ | 8.4 | 31.69 | 0.08 | 17.3 | 3500mL | |
| 1315 | 6.88 | 865 | 17.4 | 26.61 | 0.07 | 17.4 | 4500mL | |

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Client: HDR

Location: Monroe, NC

Project: Church - Birchtown (Round 5)

Well ID: MW-1

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1325 | 6.86 | 905 | 22.3 | 17.49 | 0.06 | 17.4 | 5500ml | 58.30 |
| 1335 | 6.84 | 928 | 25.5 | 10.48 | 0.05 | 17.4 | 6500ml | stable |
| 1340 | 6.84 | 930 | 25.1 | 9.60 | 0.13 | 17.4 | 7000ml | |
| 1345 | 6.84 | 932 | 25.1 | 8.91 | 0.13 | 17.4 | 7500ml | |

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## Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Brickhaven / Church (Round 5)

Name and Afiliation (Sampler(s)): C.S / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-2 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 48.13 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: ~~32.78~~ 31.15 ft Casing Volume: 2.76 gallons

Height of Water Column: 16.98 ft Cal. 3 Volumes: 8.30 gallons

**Purge Information**

Date Purged: 02 / 17 / 16 Start Time: 0915 Finish: 1110 Purge Rate: 100 mL/min

Purging Method: Monsoon Total Volume Purged: 3.0 gallons

**Sampling Information**

Date Collected: 02/17/16 Time Collected: 1110 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 8260 x3 |
| | | TDS, Fluoride, |
| | | Chloride / Sulfate |
| | | (1/2 samples = Cloudy) |

**Field Measurements/Observations**

Sample Temp (°C): 16.1 Time: 1110 Turbidity (ntu): 9.76 Time: 1110

Sample pH (s.u.): 7.63 Time: Diss Oxy (mg/L): 4.18 Time: 1110

Specific Cond. (uS): 4616 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 143.2 Time: Other: Iron 0.0 mg/L Time: 1110

Odor: None Time: Appearance: Cloudy → Clear → Cloudy

**General/Weather Observations** • Went Dry at end of sample • Recharge = dirty

Overcast, Cloudy, Cool. 44°F. Wind 2-5mph. No recharge

Sampler Signature/Date: Chris Powell / 02/17/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water level (ft) |
| 0920 | 7.18 | 4620 | 123.4 | 139.6 | 3.74 | 14.1 | 500mL | 33 |
| 0930 | 7.36 | 4648 | 126.1 | 232.9 | 3.62 | 15.3 | 1500mL | |
| 0940 | 7.49 | 4605 | 138.4 | 100.2 | 3.96 | 13.2 | 2500mL | |
| 0950 | 7.54 | 4608 | 141.1 | 72.03 | 4.10 | 13.6 | 3500mL | 35 |
| 1000 | 7.57 | 4622 | 142.9 | 60.43 | 4.05 | 13.9 | 4500mL | |

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Client: HDR

Location: Monroe, NC

Project: Charah - Brickhaven (Fund 5)

Well ID: MW-2

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1010 | 7.59 | 4648 | 144.5 | 54.19 | 4.03 | 16.5 | 5500 mL | 36.80 |
| 1020 | 7.63 | 4657 | 146.0 | 31.28 | 4.28 | 13.9 | 6500 mL | |
| 1030 | 7.63 | 4660 | 147.8 | 22.66 | 4.16 | 13.2 | 7500 mL | |
| 1040 | 7.64 | 4654 | 147.0 | 16.72 | 4.39 | 13.1 | 8500 mL | 37.80 |
| 1050 | 7.63 | 4674 | 146.8 | 15.32 | 3.97 | 13.5 | 9500 mL | |
| 1100 | 7.63 | 4620 | 144.4 | 12.79 | 4.20 | 15.4 | 10500 mL | 38.40 |
| 1105 | 7.63 | 4596 | 143.6 | 9.45 | 4.18 | 15.8 | 11000 mL | |
| 1110 | 7.63 | 4616 | 143.2 | 9.76 | 4.18 | 16.1 | 11500 mL | 38.50 |
| | | | | | | | | |
| | | | | | | | | SAMPLE = DIRTY |
| | | | | | | | | Recharge = DIRTY |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church-Brickhaven (Round 5)

Name and Afiliation (Sampler(s)): GS/PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-6 Well Locked: YES NO - Broken Lock

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 27.93 ft Multi Factor*: .1636 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 6.35 ft Casing Volume: 3.51 gallons

Height of Water Column: 21.58 ft Cal. 3 Volumes: 10.55 gallons

### Purge Information

Date Purged: 02 / 17 / 16 Start Time: 1450 Finish: ~~1655~~ 1755 GS 02/17/16 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: _____ gallons

### Sampling Information

Date Collected: 02/17/16 Time Collected: 1655 am pm

Sampling Equipment Used: GSMB

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | Metals x2, 8260 x3, |
| | | Fluoride, TDS |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 15.1 Time: 1755 Turbidity (ntu): 25.12 Time: 1755

Sample pH (s.u.): 6.35 Time: — Diss Oxy (mg/L): 0.16 Time: 1755

Specific Cond. (uS): 1307 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 172.4 Time: — Other: Iron: 0.0 mg/L Time: —

Odor: None Time: — Appearance: Cloudy w/ White Flakes

### General/Weather Observations

Sunny 55°F, wind 2-5 mph 3 hr well, Turbidity much higher than 1st round.

Sampler Signature/Date: [signature] 02/17/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1455 | 7.02 | 1640 | 162.9 | 7.68 | 0.98 | 14.7 | 500 ml | 7.20 |
| 1500 | 6.82 | 1639 | 163.0 | 8.58 | 0.89 | 14.6 | 1000 ml | 7.80 |
| 1505 | 6.77 | 1640 | 163.0 | 6.75 | 0.77 | 14.7 | 1500 ml | Stable |
| 1510 | 6.76 | 1641 | 163.1 | 69.68 | 0.76 | 14.6 | 2000 ml | |
| 1515 | 6.75 | 1641 | 163.1 | 87.58 | 0.75 | 14.6 | 2500 ml | |

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Client: HDR

Location: Moncure, NC

Project: Cherokee - Brickhaven (Round 5)

Well ID: MW-6

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0913 |
| 1.625 | 0.1020 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1525 | 6.60 | 1551 | 160.7 | 82.37 | 0.49 | 15.0 | 3500mL | 7.80 |
| 1535 | 6.52 | 1492 | 153.3 | 54.70 | 0.39 | 15.0 | 4500mL | Stable |
| 1545 | 6.44 | 1421 | 140.5 | 51.82 | 0.28 | 15.2 | 5500mL | |
| 1555 | 6.42 | 1367 | 126.9 | 31.25 | 0.27 | 15.0 | 6500mL | |
| 1605 | 6.37 | 1341 | 118.3 | 31.20 | 0.20 | 15.1 | 7500 | |
| 1615 | 6.37 | 1341 | 118.0 | 30.59 | 0.21 | 15.1 | 8500 | |
| 1625 | 6.35 | 1311 | 112.5 | 28.80 | 0.19 | 15.1 | 9500mL | |
| 1635 | 6.35 | 1307 | 112.4 | 26.69 | 0.18 | 15.1 | 10500mL | |
| 1645 | STABLE | — | | | STABLE | — | 11500mL | |
| 1655 | STABLE | — | | | STABLE | | 12500mL | |
| 1705 | | | | | | | 13500mL | |
| 1715 | | | | | | | 14500mL | |
| 1725 | | | | | | | 15500mL | |
| 1735 | | | | | | | 16500mL | |
| 1745 | | | | | | | 17500mL | |
| 1755 | | | | 25.12 | | | 18500mL | |
| 3hr mark | | | | | | | ~~19500mL~~ | |
| | | | | | | | CS | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Clean - Brightseed (Round 5)

Name and Afiliation (Sampler(s)): CS / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: GW-2 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ft Casing Volume: _____ gallons

Height of Water Column: _____ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ____/____/____ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 02/17/16 Time Collected: 0815 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3 |
| | | metals x2, Fluoride |
| | | Chloride/Sulfate, |
| | | TDS, 8260 x3 |

**Field Measurements/Observations**

Sample Temp (°C): 7.8 Time: 0815 Turbidity (ntu): 75.86 Time: 0815

Sample pH (s.u.): 6.36 Time: _____ Diss Oxy (mg/L): 7.70 Time: 0815

Specific Cond. (uS): 90.6 Time: _____ Res. Cl (mg/L): — Time: —

ReDox (mV): 182.0 Time: _____ Other: Iron: 0.0 mg/L Time: 0815

Odor: None Time: _____ Appearance: Cloudy

**General/Weather Observations**

Cloudy, Cool, Area Flooded, 43°F.

Sampler Signature/Date: [signature] / 02/17/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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## Field Data Sheet

Client: HSR Location: Monroe, NC Project Name/#: Church - Brickman (Round 5)

Name and Afiliation (Sampler(s)): L.S / PAC

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-7 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 17.64 ft Multi Factor*: .163 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 16.40 ft Casing Volume: 0.20 gallons

Height of Water Column: 1.24 ft Cal. 3 Volumes: 0.60 gallons

**Purge Information**

Date Purged: 02/18/16 Start Time: 0820 Finish: 0845 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 0.66 gallons

**Sampling Information**

Date Collected: 02/18/16 Time Collected: 0845 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | X Radium 226/228 x3, - Conduct Sample |
| | | ✓ Metals x2 ✓ 8260 x3, (well DIY) |
| | | ✓ TDS, Fluoride |
| | | ✓ Chloride/Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 9.4 Time: 0845 Turbidity (ntu): 4.96 Time: 0845

Sample pH (s.u.): 6.87 Time: Diss Oxy (mg/L): 5.09 Time: 0845

Specific Cond. (uS): 1977 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 154.6 Time: Other: 1.5in, 0.0 mg/L Time: 0845

Odor: None Time: Appearance: Clear

**General/Weather Observations**

Dry, 2hr = No recharge. 1/2 Gallon

Sunny, 33°F. New recharged water. Little/No water

Sampler Signature/Date: [signature] / 02/18/17

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 0825 | 6.91 | 1994 | 153.9 | 5.09 | 5.18 | 10.3 | 50 ml | 16.50 |
| 0830 | 6.90 | 1996 | 154.1 | 5.50 | 5.17 | 9.9 | 100 ml | |
| 0835 | 6.89 | 1986 | 154.3 | 5.46 | 5.10 | 9.7 | 150 ml | 16.60 |
| 0840 | 6.87 | 1978 | 154.5 | 5.10 | 5.08 | 9.5 | 200 ml | |
| 0845 | 6.87 | 1977 | 154.6 | 4.96 | 5.09 | 9.4 | 250 ml | 16.70 |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church - Bricklayer

Name and Afiliation (Sampler(s): C.S / PAE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-7 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 17.64 ft Multi Factor*: .0630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 17.60 ft Casing Volume: .00652 gallons

Height of Water Column: .04 ft Cal. 3 Volumes: 0.01956 gallons

**Purge Information**

Date Purged:____/____/____ Start Time:____ Finish:____ Purge Rate:____

Purging Method:____ Total Volume Purged: ____ gallons

**Sampling Information**

Date Collected:____ Time Collected:____ am pm

Sampling Equipment Used:____

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**Field Measurements/Observations**

Sample Temp (°C): ____ Time:____ Turbidity (ntu): ____ Time: ____

Sample pH (s.u.): ____ Time: ____ Diss Oxy (mg/L):____ Time: ____

Specific Cond. (uS): ____ Time: ____ Res. Cl (mg/L): ____ Time:____

ReDox (mV): ____ Time: ____ Other: ____ Time: ____

Odor: ____ Time: ____ Appearance: ____

**General/Weather Observations**

Well DRY 02/18/16, 02/19/16 = CHECK = DRY!

Sampler Signature/Date: [signature] 02/19/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Cherokee - Brickhaven

Name and Afiliation (Sampler(s)): CS / PAE (Round 5)

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-8 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 49.68 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 35.92 ft Casing Volume: 2.24 gallons

Height of Water Column: 13.76 ft Cal. 3 Volumes: 6.72 gallons

### Purge Information

Date Purged: 02/18/16 Start Time: 1000 Finish: 1110 Purge Rate: 100 ml/min

Purging Method: Monsoon Total Volume Purged: 1.85 gallons

### Sampling Information

Date Collected: 02/18/16 Time Collected: 1110 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 226/228 x3, |
| | | metals x2, 8260 x3, |
| | | TDS, Fluoride, |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 14.9 Time: 1110 Turbidity (ntu): 8.52 Time: 1110

Sample pH (s.u.): 6.42 Time: Diss Oxy (mg/L): 0.79 Time: 1110

Specific Cond. (uS): 2320 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 99.9 Time: Other: Iron: 0.0 mg/L Time: 1110

Odor: None Time: Appearance: Clear

### General/Weather Observations

Sunny, 36°F, Walk Down gradient, Muddy!

Sampler Signature/Date: [signature] 02/18/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other (FA) Water Level |
|---|---|---|---|---|---|---|---|---|
| 1005 | 6.63 | 4425 | 140.1 | 116.3 | 3.01 | 14.9 | 500 ml | 36.30 |
| 1015 | 6.69 | 3531 | 126.8 | 61.79 | 1.94 | 15.1 | 1500 ml | 37.10 |
| 1025 | 6.71 | 3307 | 161.0 | 31.66 | 1.76 | 15.1 | 250 ml | |
| 1035 | 6.76 | 2807 | 126.3 | 25.79 | 1.33 | 15.5 | 3500 ml | 37.80 |
| 1045 | 6.85 | 2367 | 107.2 | 19.60 | 1.09 | 15.0 | 4500 ml | STABLE |

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Client: HDR

Location: Montvale, NJ

Project: Church - Brickshaven (Round 5)

Well ID: MW-9

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | water level (ft) |
| 1055 | 6.81 | 2420 | 103.4 | 11.66 | 0.90 | 14.8 | 550ml | 37.80 |
| 1100 | 6.82 | 2373 | 101.9 | 9.76 | 0.81 | 14.7 | 600ml | STABLE |
| 1105 | 6.82 | 2350 | 101.1 | 8.86 | 0.80 | 14.8 | 650ml | |
| 1110 | 6.82 | 2320 | 99.9 | 8.52 | 0.79 | 14.9 | 700ml | |

## Field Data Sheet

Client: Cherah Location: Monroe, NC Project Name/#: Buckhorn

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-5 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 46.96 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 24.80 ft Casing Volume: 3.61 gallons

Height of Water Column: 22.16 ft Cal. 3 Volumes: 10.83 gallons

**Purge Information**

Date Purged: 04 / 05 / 16 Start Time: 1200 Finish: 1220 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 2000 ~~gallons~~ ml

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 1220 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RADX3, METALSX2, |
| | | 8260X3, TDS, |
| | | Fluoride, Chloride/ |
| | | Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 11.4 Time: 1220 Turbidity (ntu): 1.4 Time: 1220

Sample pH (s.u.): 6.9 Time: Diss Oxy (mg/L): 1.3 Time: 1220

Specific Cond. (uS): 374.3 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 127.0 Time: Other: Iron: 0.0mg/L Time: 1220

Odor: None Time: Appearance: Clear

**General/Weather Observations**

Wind: 15-20 mph Cloudy, 52°F.

Sampler Signature/Date: [signature] / 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1205 | 7.0 | 380.3 | 126.6 | 1.7 | 1.3 | 13.5 | 500ml | 25.60 |
| 1210 | 6.9 | 373.3 | 126.8 | 1.6 | 1.3 | 12.1 | 1000ml | 25.85 |
| 1215 | 6.9 | 374.2 | 127.1 | 1.8 | 1.3 | 12.2 | 1500ml | 25.95 |
| 1220 | 6.9 | 374.3 | 127.0 | 1.4 | 1.3 | 11.4 | 2000ml | 26.10 |
| | | | | | | | | |

## Field Data Sheet

Client: Church Location: Monroe, NC Project Name/#: Brickhaven

Name and Afiliation (Sampler(s)): CES/PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-6 Well Locked: YES NO - Broken Locks

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 27.93 ft Multi Factor*: 1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 6.97 ft Casing Volume: 3.41 gallons

Height of Water Column: 20.96 ft Cal. 3 Volumes: 10.24 gallons

**Purge Information**

Date Purged: 04 / 05 / 16 Start Time: 1445 Finish: 1615 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 9000 ~~gallons~~ ml

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 1615 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RAD vs, metals x2, |
| | | 8260x3, TDS, |
| | | Fluoride, chloride/ |
| | | sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 14.8 Time: 1615 Turbidity (ntu): 9.9 Time: 1615

Sample pH (s.u.): 6.4 Time: Diss Oxy (mg/L): 0.1 Time: 1615

Specific Cond. (uS): 1296 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 161.8 Time: Other: Iron 0.0mg/L Time: 1615

Odor: None Time: Appearance: Cloudy/clear

**General/Weather Observations**

Sunny 54°F. Wind 10-20mph. Walk to well. Turbidity = ↑↓

Sampler Signature/Date: [signature] 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1450 | 7.0 | 1521 | 164.8 | 5.4 | 0.2 | 15.2 | 500ml | 7.55 |
| 1455 | 6.6 | 1519 | 165.4 | 7.9 | 0.1 | 14.8 | 1000ml | 7.75 |
| 1500 | 6.6 | 1517 | 165.7 | 18.0 | 0.1 | 15.6 | 1500ml | 7.85 |
| 1505 | 6.6 | 1507 | 158.1 | 26.0 | 0.1 | 15.5 | 2000ml | 7.95 |
| 1515 | 6.5 | 1476 | 158.8 | 25.0 | 0.1 | 15.6 | ~~2500ml~~ 3000ml | 7.97 |

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Client: Charah

Location: Monroe, NC

Project: Brickhaven

Well ID: MW-6

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water level: (ft) |
| 1525 | 6.5 | 1455 | 160.1 | 14.8 | 0.1 | 15.3 | 4000ml | 8.00 |
| 1535 | 6.5 | 1367 | 162.6 | 13.5 | 0.1 | 14.8 | 5000ml | 8.02 |
| 1545 | 6.5 | 1339 | 163.6 | 16.3 | 0.1 | 14.5 | 6000ml | 8.05 |
| 1555 | 6.4 | 1289 | 161.4 | 16.1 | 0.1 | 14.8 | 7000ml | stable |
| 1605 | 6.4 | 1289 | 161.4 | 12.7 | 0.1 | 14.9 | 8000ml | | |
| 1615 | 6.4 | 1296 | 161.8 | 9.9 | 0.1 | 14.8 | 9000ml | | |

## Field Data Sheet

Client: Charah Location: Moncure, NC Project Name/#: Brickhaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: BG-1 Well Locked: ~~YES~~ NO

Well Diameter: 2" Construction: ~~PVC~~ Steel Stainless Steel

Total Well Depth: 43.78 ft Multi Factor*: 1.630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 9.73 ft Casing Volume: 5.55 gallons

Height of Water Column: 34.05 ft Cal. 3 Volumes: 16.65 gallons

**Purge Information**

Date Purged: 04/05/16 Start Time: 1055 Finish: 1120 Purge Rate: 100mL/min

Purging Method: Peristaltic Total Volume Purged: 2500 mL ~~gallons~~

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 1120 am ~~pm~~

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RAD. x3, metals x2, |
| | | 8260 x3, TDS, |
| | | Fluoride, Chloride/ |
| | | Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 13.0 Time: 1120 Turbidity (ntu): 0.9 Time: 1120

Sample pH (s.u.): 6.6 Time: Diss Oxy (mg/L): 1.9 Time: 1120

Specific Cond. (uS): 1199 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 168.5 Time: Other: Iron 0.0 mg/L Time: 1120

Odor: None Time: Appearance: Clear

**General/Weather Observations**

Wind, 10-15 mh. Cloudy. 50°F. No rechargE

Sampler Signature/Date: [signature] / 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1100 | 6.5 | 1195 | 148.3 | 1.6 | 2.0 | 13.2 | 500mL | 10.30 |
| 1105 | 6.6 | 1198 | 157.1 | 1.5 | 1.9 | 13.0 | 1000mL | 10.70 |
| 1110 | 6.6 | 1198 | 162.2 | 1.1 | ~~1.7~~ 1.9 | 13.8 | 1500mL | 10.80 |
| 1115 | 6.6 | 1197 | 165.8 | 1.6 | 1.9 | 13.3 | 2000mL | 10.90 |
| 1120 | 6.6 | 1199 | 168.5 | 0.9 | 1.9 | 13.0 | 2500mL | 11.00 |

## Field Data Sheet

Client: Charah Location: Monroe, NC Project Name/#: Brickhaven

Name and Afiliation (Sampler(s): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: SL-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ___/___/___ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 1020 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | Radium 22/228 x3 |
| | | metals x2, TDS |
| | | Fluoride, chloride/sulfate, |
| | | 826 x3 |

**Field Measurements/Observations**

Sample Temp (°C): 11.2 Time: 1020 Turbidity (ntu): 120.7 Time: 1020

Sample pH (s.u.): 6.9 Time: _____ Diss Oxy (mg/L): 6.1 Time: 1020

Specific Cond. (uS): 79.8 Time: _____ Res. Cl (mg/L): — Time: —

ReDox (mV): 107.6 Time: _____ Other: Iron 0.0mg/L Time: 1020

Odor: None Time: _____ Appearance: orange tint

**General/Weather Observations**

Wind. 15-25mph. Sunny/Cloudy 50°F.

Sampler Signature/Date: [signature] 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | 120.7 | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## Field Data Sheet

Client: Charter Location: Monroe, NC Project Name/#: Brickshaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: SW-2 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ____/____/____ Start Time: _____ Finish: _____ Purge Rate: _____

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 0940 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RAD x3, metals x2, |
| | | 8260 x3, TDS |
| | | Fluoride, Chloride/ |
| | | Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 13.8 Time: 0940 Turbidity (ntu): 51.6 Time: 0940

Sample pH (s.u.): 6.5 Time: — Diss Oxy (mg/L): 5.7 Time: 0940

Specific Cond. (uS): 211.0 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 51.0 Time: — Other: Iron 0.5 mg/L Time: 0940

Odor: None Time: — Appearance: Brown tint

**General/Weather Observations**

Wind, 15-20 mph Sunny / cloudy, 50°F

Sampler Signature/Date: [signature] / 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## Field Data Sheet

Client: Charah Location: Marion, NC Project Name/#: Brickhaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: Leachate-1 Well Locked: YES NO

Well Diameter: _____ Construction: PVC Steel Stainless Steel

Total Well Depth: _____ ft Multi Factor*: _____ [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: _____ ft Casing Volume: _____ gallons

Height of Water Column: _____ ft Cal. 3 Volumes: _____ gallons

**Purge Information**

Date Purged: ___/___/___ Start Time: _____ Finish: _____ Purge Rate: 100 mL/min

Purging Method: _____ Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: 04/05/16 Time Collected: 1410 am pm

Sampling Equipment Used: Grab / Spigot

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RA226, RA228, |
| | | 8260x3, TDS |
| | | Fluoride, chloride/ |
| | | Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 15.4 Time: 1410 Turbidity (ntu): 9.5 Time: 1410

Sample pH (s.u.): 7.7 Time: | Diss Oxy (mg/L): 6.4 Time: 1410

Specific Cond. (uS): 766 Time: | Res. Cl (mg/L): — Time: —

ReDox (mV): 169.4 Time: | Other: Iron 0.0 mg/L Time: 1410

Odor: None Time: | Appearance: Clear

**General/Weather Observations**

Sunny, 52°F, wind 10-20 mph, leachate on side of water tank

Sampler Signature/Date: [signature] 04/05/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
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## Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Cmath - Brickhaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-1 Well Locked: YES NO - Broken Locks

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 75.55 ft Multi Factor*: 1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 58.25 ft Casing Volume: 2.81 gallons

Height of Water Column: 17.3 ft Cal. 3 Volumes: 8.45 gallons

**Purge Information**

Date Purged: 04/06/16 Start Time: 1215 Finish: 1325 Purge Rate: 100 mL/min

Purging Method: Monsoon Total Volume Purged: 7,000 ~~gallons~~ mL

**Sampling Information**

Date Collected: 04/06/16 Time Collected: 1325 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RADx3, metals x2, |
| | | 8260x3, TDS, |
| | | Fluoride, |
| | | chloride/sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 18.0 Time: 1325 Turbidity (ntu): 8.4 Time: 1325

Sample pH (s.u.): 6.7 Time: — Diss Oxy (mg/L): 0.02 Time: 1325

Specific Cond. (uS): 1399 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 37.8 Time: — Other: Iron 0.0 mg/L Time: 1325

Odor: None Time: — Appearance: Clear

**General/Weather Observations**

Sunny, 54°F wind: 5-10 mph. Good recharge. FD: 1345

Sampler Signature/Date: [signature] / 04/06/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1220 | 7.3 | 538.0 | 39.2 | 197.1 | 0.1 | 17.7 | 500mL | 58.47 |
| 1225 | 7.2 | 537.7 | 10.3 | 151.2 | 0.1 | 17.7 | 1000mL | 58.50 |
| 1235 | 7.1 | 626 | 3.9 | 90.4 | 0.1 | 17.8 | 2000mL | 58.52 |
| 1245 | 7.0 | 824 | 10.0 | 69.2 | 0.1 | 17.8 | 3000mL | 58.50 |
| 1255 | 6.8 | 1077 | 21.5 | 42.3 | 0.04 | 17.9 | 4000mL | 58.50 |

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| | Document Number: F-CAR-FLD-001.rev.011 | Issueing Authority: Pace Huntersville Quality Office |

Client: HDR

Location: Monroe, NC

Project: Church - Brickhaven

Well ID: MW-1

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level: (ft) |
| 1305 | 6.8 | 1247 | 30.1 | 22.1 | 0.03 | 18.0 | 500mL | 58.50 |
| 1315 | 6.7 | 1361 | 36.0 | 12.4 | 0.03 | 18.0 | 6000mL | Stable |
| 1320 | 6.7 | 1392 | 37.6 | 9.7 | 0.03 | 18.0 | 6500mL | ↓ |
| 1325 | 6.7 | 1399 | 37.8 | 8.4 | 0.02 | 18.0 | 7000mL | ↓ |

## Field Data Sheet

Client: HDR Location: Monroe, NC Project Name/#: Church-Brickshaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-2 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 48.13 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 28.80 ft Casing Volume: 3.15 gallons

Height of Water Column: 19.33 ft Cal. 3 Volumes: 9.45 gallons

### Purge Information

Date Purged: 04 / 06 / 16 Start Time: 1415 Finish: 1630 Purge Rate: 100 ml/min

Purging Method: Monsoon Total Volume Purged: 13,500 ~~gallons~~ ml

### Sampling Information

Date Collected: 04/06/16 Time Collected: 1630 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | 6A0 x3, metals x2, |
| | | 8260 x3, TDS, |
| | | Fluoride |
| | | Chloride/Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 18.6 Time: 1630 Turbidity (ntu): 24.4 Time: 1630

Sample pH (s.u.): 7.6 Time: Diss Oxy (mg/L): 2.4 Time: 1630

Specific Cond. (uS): 4542 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 138.2 Time: Other: Iron: 0.0 mg/L Time: 1630

Odor: None Time: — Appearance: Cloudy

### General/Weather Observations

Sunny, 56°F Wind 10-15 mph No precipitation, 2hr purge Turb ↑ = sample

Sampler Signature/Date: [signature] / 04/06/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1420 | 7.4 | 4561 | 132.6 | 28.4 | 3.6 | 17.8 | 500 ml | 28.95 |
| 1430 | 7.5 | 4598 | 130.0 | 27.2 | 2.8 | 17.8 | 1500 ml | 29.45 |
| 1440 | 7.5 | 4559 | 129.2 | 66.4 | 2.4 | 18.3 | 2500 ml | 29.90 |
| 1450 | 7.5 | 4600 | 131.0 | 69.6 | 2.5 | 17.8 | 3500 ml | 30.15 |
| 1500 | 7.5 | 4531 | 131.9 | 99.8 | 2.2 | 18.4 | 4500 ml | 30.20 |

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Client: HDR

Location: Moncure, NC

Project: Cheatham - Brickhaven

Well ID: MW-2

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level: (ft) |
| 1510 | 7.6 | 4545 | 135.9 | 87.1 | 2.5 | 18.7 | 5500ml | 31.00 |
| 1520 | 7.5 | 4552 | 136.7 | 67.2 | 2.7 | 18.4 | 6500ml | 32.00 |
| 1530 | 7.5 | 4549 | 136.8 | 48.4 | 2.7 | 18.4 | 7500ml | 32.45 |
| 1540 | 7.6 | 4547 | 137.6 | 41.6 | 2.4 | 18.6 | 8500ml | 32.90 |
| 1550 | 7.6 | 4548 | 137.8 | 38.1 | 2.4 | 18.5 | 9500ml | 33.10 |
| 1600 | 7.6 | 4542 | 138.2 | 25.9 | 2.4 | 18.6 | 10,500ml | 33.25 |
| 1610 | STABLE | STABLE | STABLE | 21.5 | STABLE | STABLE | 11,500ml | 33.45 |
| 1620 | | | | 21.4 | | | 12,500ml | 2 hr mark |
| 1630 | | | | 24.4 | | | 13,500 | Turb. ↑ = sample |

## Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Cherah / Brickhaven

Name and Afiliation (Sampler(s)): CES / PAE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-7 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 17.64 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 16.05 ft Casing Volume: 0.25 gallons

Height of Water Column: 1.59 ft Cal. 3 Volumes: 0.77 gallons

**Purge Information**

Date Purged: 04 / 06 / 16 Start Time: 0935 Finish: 0955 Purge Rate: 100ml/min

Purging Method: Peristaltic Total Volume Purged: 2000 ~~gallons~~ ml

**Sampling Information**

Date Collected: 04/06/16 Time Collected: 0955 ~~am~~ ~~pm~~

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | Limited Sample volume | RAD x3, metals x2, 8260 x3, TDS |
| | ⊘ only 2 RADs Pulled | Fluoride, chloride/ - |
| | + metals 8260, TDS Fluoride, chloride/sulfate | - sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 12.6 Time: 0955 Turbidity (ntu): 3.4 Time: 0955

Sample pH (s.u.): 6.6 Time: — Diss Oxy (mg/L): 4.4 Time: 0955

Specific Cond. (uS): 1895 Time: — Res. Cl (mg/L): — Time: —

ReDox (mV): 57.3 Time: — Other: Iron, 0.0mg/L Time: 0955

Odor: None Time: — Appearance: Limited sample volume → pull metals last

**General/Weather Observations**

Sunny. 34°F Wind: 10-15MH. Pulled sample to start.

Sampler Signature/Date: [signature] / 04/06/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level: (ft) |
|---|---|---|---|---|---|---|---|---|
| 0940 | 6.5 | 1867 | 147.2 | 11.3 | 4.2 | 11.5 | 500ml | 16.40 |
| 0945 | 6.6 | 1884 | 117.4 | 5.2 | 4.4 | 12.1 | 1000ml | 16.50 |
| 0950 | 6.6 | 1887 | 86.7 | 5.4 | 4.4 | 12.3 | 1500ml | 16.60 |
| 0955 | 6.6 | 1895 | 57.3 | 3.4 | 4.4 | 12.6 | 2000ml | 16.70 |
| | | | | | | | | |

# Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Chatham / Brickhaven

Name and Afiliation (Sampler(s)): CES / PACE

Name and Afiliation (Inspector): —

## Well Information

Well ID: MW-8 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 49.68 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 36.98 ft Casing Volume: 1.63 gallons

Height of Water Column: 10.0 ft Cal. 3 Volumes: 4.89 gallons

## Purge Information

Date Purged: 04 / 06 / 16 Start Time: 1045 Finish: 1140 Purge Rate: 100 ml/min

Purging Method: Monsoon Total Volume Purged: 5500 ~~gallons~~ ml

## Sampling Information

Date Collected: 04/06/16 Time Collected: 1140 am ~~pm~~

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RAD x3, Metals x2, |
| | | 8260 x3, TDS, |
| | | Fluoride, Chloride/- |
| | | - Sulfate |

## Field Measurements/Observations

Sample Temp (°C): 16.9 Time: 1140 Turbidity (ntu): 5.9 Time: 1140

Sample pH (s.u.): 6.8 Time: Diss Oxy (mg/L): 1.1 Time: 1140

Specific Cond. (uS): 2620 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 119.6 Time: Other: Iron, 0.0mg/L Time: 1140

Odor: None Time: Appearance: Clear

## General/Weather Observations

Sunny, 46°F. wind 10-15 mph. walk to well

Sampler Signature/Date: [signature] 04/06/16

## Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other water level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1050 | 6.6 | 4057 | 145.7 | 88.70 | 2.8 | 16.5 | 500ml | 37.70 |
| 1055 | 6.6 | 4007 | 144.9 | 73.66 | 2.7 | 16.7 | 1000ml | 37.75 |
| 1105 | 6.7 | 3627 | 139.5 | 35.00 | 2.3 | 16.9 | 2000ml | 38.25 |
| 1115 | 6.7 | 3008 | 129.1 | 14.1 | 1.5 | 17.0 | 3000ml | 38.55 |
| 1120 | 6.7 | 2858 | 126.1 | 10.5 | 1.4 | 16.9 | ~~4000ml~~ 3500ml | 38.55 |

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Client: HDR

Location: Monroe, NC

Project: Church - Buckhaven

Well ID: MW-8

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1125 | 6.7 | 2400 | 125.0 | 7.8 | 1.3 | 16.9 | 400ml | 38.55 |
| 1130 | 6.8 | 2655 | 120.7 | 6.1 | 1.1 | 17.2 | 450ml | Stable |
| 1135 | 6.8 | 2649 | 119.4 | 6.2 | 1.1 | 17.1 | 500ml | \| |
| 1140 | 6.8 | 2620 | 118.6 | 5.9 | 1.1 | 16.9 | 550ml | \| |
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## Field Data Sheet

Client: HDR Location: Mooresville, NC Project Name/#: Cherah-Brickhaven

Name and Afiliation (Sampler(s): GES / PACE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-3 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 43.60 ft Multi Factor*: .1636 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 10.20 ft Casing Volume: 5.44 gallons

Height of Water Column: 33.40 ft Cal. 3 Volumes: 16.33 gallons

**Purge Information**

Date Purged: 04 / 07 / 16 Start Time: 0940 Finish: 1005 Purge Rate: 100 ml/min

Purging Method: Peristaltic Total Volume Purged: 2500 ~~gallons~~ mL

**Sampling Information**

Date Collected: 04/07/16 Time Collected: 1005 am ~~pm~~

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RADs x5, metals x2 |
| | | 8260 x3, TDS, |
| | | Fluoride, Chloride/ |
| | | - Sulfate |

**Field Measurements/Observations**

Sample Temp (°C): 15.9 Time: 1005 Turbidity (ntu): 1.2 Time: 1005

Sample pH (s.u.): 7.1 Time: Diss Oxy (mg/L): 3.7 Time: 1005

Specific Cond. (uS): 4299 Time: Res. Cl (mg/L): — Time: —

ReDox (mV): 172.0 Time: Other: Iron 0.0 mg/L Time: 1005

Odor: None Time: Appearance: Clear

**General/Weather Observations**

Cloudy, 54°F wind 15mph, No rechase

Sampler Signature/Date: [signature] / 04/07/16

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 0945 | 6.7 | 4296 | 177.6 | 2.5 | 4.0 | 16.1 | 500ml | 10.80 |
| 0950 | 7.0 | 4296 | 173.7 | 2.0 | 3.8 | 15.8 | 1000ml | 11.68 |
| 0955 | 7.1 | 4300 | 172.6 | 0.8 | 3.7 | 15.9 | 1500ml | 12.55 |
| 1000 | 7.1 | 4297 | 172.2 | 1.3 | 3.7 | 15.9 | 2000ml | 13.00 |
| 1005 | 7.1 | 4299 | 172.0 | 1.2 | 3.7 | 15.9 | 2500ml | 13.50 |

## Field Data Sheet

Client: HDR Location: Mercure, NC Project Name/#: Charah - Brickhaven

Name and Afiliation (Sampler(s)): CES/PACE

Name and Afiliation (Inspector): —

### Well Information

Well ID: MW-4 Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 25.74 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 8.79 ft Casing Volume: 2.76 gallons

Height of Water Column: 16.95 ft Cal. 3 Volumes: 8.28 gallons

### Purge Information

Date Purged: 04 / 07 / 16 Start Time: 1050 Finish: 1255 Purge Rate: 100 mL/min

Purging Method: Peristaltic Total Volume Purged: 12,500 ~~gallons~~ mL US

### Sampling Information

Date Collected: 04/07/16 Time Collected: 1255 am pm

Sampling Equipment Used: Grab

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | RADx3, 8260x3, |
| | | Metals x2, TDS, |
| | | Fluoride, chloride/ |
| | | - Sulfate |

### Field Measurements/Observations

Sample Temp (°C): 17.6 Time: 1255 Turbidity (ntu): 22.5 Time: 1255

Sample pH (s.u.): 6.4 Time: Diss Oxy (mg/L): 0.1 Time: 1255

Specific Cond. (uS): 985 Time: Res. Cl (mg/L): — Time:

ReDox (mV): 10.1 Time: Other: Iron, 1.5 mg/L Time: 1255

Odor: None Time: Appearance: Cloudy w/ Floc → Clear w/ Floc @ 2 hr mark - Sample

### General/Weather Observations

Cloudy, 57°F, wind, 10-15 mph. Next to Future Cell - Dirty Pond water

Sampler Signature/Date: [signature] / 04/07/16

### Stabilization Test

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other Water Level (ft) |
|---|---|---|---|---|---|---|---|---|
| 1055 | 6.8 | 1129 | -5.3 | 53.0 | 0.3 | 15.7 | 500mL | 9.50 |
| 1105 | 6.5 | 1123 | -0.4 | 15.4 | 0.2 | 15.9 | 1500mL | 9.85 |
| 1110 | 6.5 | 1111 | 0.5 | 13.6 | 0.1 | 16.1 | 2000mL | 10.00 |
| 1115 | 6.5 | 1091 | 0.3 | 13.3 | 0.1 | 16.4 | 2500mL | 10.05 |
| 1120 | 6.5 | 1071 | 0.1 | 14.1 | 0.1 | 16.3 | 3000mL | 10.10 |

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|---|---|---|
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Client: HDR

Location: Moncure, NC

Project: Charah - Brickhaven

Well ID: MW-4

| Well Diameter | Multiplication Factor* |
|---|---|
| 1 | 0.0408 |
| 1.2 | 0.0918 |
| 1.625 | 0.1080 |
| 2 | 0.1630 |
| 3 | 0.3670 |
| 4 | 0.6530 |
| 6 | 1.4680 |
| 8 | 2.6100 |

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water Level (ft) |
| 1125 | 6.5 | 1060 | -0.1 | 20.2 | 0.1 | 16.6 | 3500mL | 10.15 |
| 1135 | 6.4 | 1010 | 1.8 | 22.5 | 0.1 | 17.0 | 4500mL | 10.20 |
| 1145 | 6.4 | 1003 | 1.2 | 28.0 | 0.1 | 16.7 | 5500mL | 10.10 |
| 1155 | 6.4 | 1014 | 3.2 | 26.7 | 0.2 | 16.8 | 6500mL | 10.00 |
| 1205 | 6.4 | 993 | 5.8 | 41.9 | 0.1 | 17.4 | 7500mL | |
| 1215 | 6.4 | 989 | 9.5 | 29.1 | 0.1 | 17.0 | 8500mL | |
| 1225 | 6.4 | 985 | 10.1 | 20.6 | 0.1 | 17.6 | 9500mL | |
| 1235 | STABLE | STABLE | | 18.9 | STABLE | STABLE | 10500mL | |
| 1245 | | | | 20.80 | | | 11500mL | |
| 1255 | | | | 22.5 | | | 12500mL | 2 hr mark |

## Field Data Sheet

Client: HDR Location: Moncure, NC Project Name/#: Cheraw-Brickhaven

Name and Afiliation (Sampler(s): CES/PAE

Name and Afiliation (Inspector): —

**Well Information**

Well ID: MW-7 (24hr ✓) Well Locked: YES NO

Well Diameter: 2" Construction: PVC Steel Stainless Steel

Total Well Depth: 17.64 ft Multi Factor*: .1630 [*(Radius/12)2 x 3.14 x 7.48]

Static Water Level: 17.25 ft Casing Volume: .063 gallons

Height of Water Column: 0.39 ft Cal. 3 Volumes: 0.19 gallons) RY

**Purge Information**

Date Purged: 04 / 07 / 16 Start Time: 1330 Finish: 1332 Purge Rate: 100ml/min

Purging Method: Peristaltic Total Volume Purged: _____ gallons

**Sampling Information**

Date Collected: _____ Time Collected: _____ am pm

Sampling Equipment Used: _____

| Bottle Type | Preservation | Analysis Required |
|---|---|---|
| | | X RAD 226/228 (1) (Not enough H2O) |
| | | |
| | | |
| | | |

**Field Measurements/Observations**

Sample Temp (°C): _____ Time: _____ Turbidity (ntu): _____ Time: _____

Sample pH (s.u.): _____ Time: _____ Diss Oxy (mg/L): _____ Time: _____

Specific Cond. (uS): _____ Time: _____ Res. Cl (mg/L): _____ Time: _____

ReDox (mV): _____ Time: _____ Other: _____ Time: _____

Odor: _____ Time: _____ Appearance: _____

**General/Weather Observations**

24 hr ✓ - Not enough H2O on 04/06/16

Sampler Signature/Date: [signature]

**Stabilization Test**

| Time Purged | pH (s.u.) | Spec. Cond. (uS) | ReDox (mV) | Turbidity (ntu) | Diss Oxy. (mg/L) | Temp. (°C) | Volume Removed | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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# B

## Appendix B – 4th,5th, & 6th Round Laboratory Reports and Chains of Custody

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

January 28, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on January 05, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92281799001** | **SW-2** | Water | 01/04/16 08:55 | 01/05/16 12:30 |
| **92281799002** | **SW-1** | Water | 01/04/16 09:35 | 01/05/16 12:30 |
| **92281799003** | **BG-1** | Water | 01/04/16 11:52 | 01/05/16 12:30 |
| **92281799004** | **MW-5** | Water | 01/04/16 13:25 | 01/05/16 12:30 |
| **92281799005** | **LEACHATE-1** | Water | 01/04/16 13:45 | 01/05/16 12:30 |
| **92281799006** | **MW-4** | Water | 01/04/16 15:15 | 01/05/16 12:30 |
| **92281799007** | **AMBIENT BLANK** | Water | 01/04/16 17:00 | 01/05/16 12:30 |
| **92281799008** | **EQUIPMENT BLANK** | Water | 01/04/16 17:30 | 01/05/16 12:30 |
| **92281799009** | **TRIP BLANK** | Water | 01/04/16 00:00 | 01/05/16 12:30 |



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## SAMPLE ANALYTE COUNT

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92281799001** | **SW-2** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799002** | **SW-1** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799003** | **BG-1** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799004** | **MW-5** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799005** | **LEACHATE-1** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799006** | **MW-4** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799007** | **AMBIENT BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799008** | **EQUIPMENT BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92281799009** | **TRIP BLANK** | EPA 8260 | NB | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92281799001** | **SW-2** | | | | | |
| EPA 300.0 | Chloride | 6.7 | mg/L | 1.0 | 01/11/16 10:34 | |
| EPA 300.0 | Sulfate | 9.4 | mg/L | 1.0 | 01/11/16 10:34 | |
| EPA 6010 | Barium | 56.1 | ug/L | 5.0 | 01/07/16 19:40 | |
| EPA 6010 | Calcium | 6220 | ug/L | 100 | 01/07/16 19:40 | |
| EPA 6010 | Thallium | 11.4 | ug/L | 5.4 | 01/07/16 19:40 | M1 |
| EPA 6010 | Zinc | 14.2 | ug/L | 10.0 | 01/07/16 19:40 | |
| EPA 6020A | Boron | 18.2 | ug/L | 5.0 | 01/08/16 12:30 | |
| EPA 6020A | Lithium | 0.78 | ug/L | 0.50 | 01/08/16 12:30 | |
| EPA 903.1 | Radium-226 | -0.213 ± 0.590 (1.00) C:NA T:60% | pCi/L | | 01/25/16 18:37 | |
| EPA 904.0 | Radium-228 | 0.833 ± 0.990 (2.05) C:88% T:29% | pCi/L | | 01/22/16 13:01 | |
| SM 2540C | Total Dissolved Solids | 72.0 | mg/L | 25.0 | 01/06/16 10:49 | D6 |
| **92281799002** | **SW-1** | | | | | |
| EPA 300.0 | Chloride | 7.6 | mg/L | 1.0 | 01/11/16 11:41 | |
| EPA 300.0 | Fluoride | 0.12 | mg/L | 0.10 | 01/11/16 11:41 | |
| EPA 300.0 | Sulfate | 18.2 | mg/L | 1.0 | 01/11/16 11:41 | |
| EPA 6010 | Barium | 82.8 | ug/L | 5.0 | 01/07/16 19:49 | |
| EPA 6010 | Calcium | 4080 | ug/L | 100 | 01/07/16 19:49 | |
| EPA 6010 | Thallium | 12.9 | ug/L | 5.4 | 01/07/16 19:49 | |
| EPA 6010 | Vanadium | 8.9 | ug/L | 5.0 | 01/07/16 19:49 | |
| EPA 6010 | Zinc | 12.8 | ug/L | 10.0 | 01/07/16 19:49 | |
| EPA 6020A | Boron | 12.7 | ug/L | 5.0 | 01/08/16 12:17 | |
| EPA 6020A | Lithium | 2.4 | ug/L | 0.50 | 01/08/16 12:17 | |
| EPA 903.1 | Radium-226 | 0.390 ± 0.510 (0.841) C:NA T:76% | pCi/L | | 01/25/16 18:37 | |
| EPA 904.0 | Radium-228 | 0.543 ± 0.472 (0.923) C:88% T:57% | pCi/L | | 01/22/16 13:01 | |
| SM 2540C | Total Dissolved Solids | 205 | mg/L | 25.0 | 01/06/16 10:50 | |
| **92281799003** | **BG-1** | | | | | |
| EPA 300.0 | Chloride | 285 | mg/L | 5.0 | 01/12/16 02:41 | |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 01/11/16 12:04 | |
| EPA 300.0 | Sulfate | 19.5 | mg/L | 1.0 | 01/11/16 12:04 | |
| EPA 6010 | Barium | 310 | ug/L | 5.0 | 01/07/16 19:52 | |
| EPA 6010 | Calcium | 28600 | ug/L | 100 | 01/07/16 19:52 | |
| EPA 6020A | Boron | 7.5 | ug/L | 5.0 | 01/08/16 12:20 | |
| EPA 6020A | Lithium | 15.0 | ug/L | 0.50 | 01/08/16 12:20 | |



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## SUMMARY OF DETECTION

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92281799003** | **BG-1** | | | | | |
| EPA 903.1 | Radium-226 | -0.206 ± 0.315 (0.827) C:NA T:96% | pCi/L | | 01/25/16 19:31 | |
| EPA 904.0 | Radium-228 | 0.808 ± 0.449 (0.817) C:81% T:76% | pCi/L | | 01/27/16 16:53 | 2g |
| SM 2540C | Total Dissolved Solids | 643 | mg/L | 25.0 | 01/06/16 10:50 | |
| **92281799004** | **MW-5** | | | | | |
| EPA 300.0 | Chloride | 21.9 | mg/L | 1.0 | 01/11/16 12:26 | |
| EPA 300.0 | Fluoride | 0.56 | mg/L | 0.10 | 01/11/16 12:26 | |
| EPA 300.0 | Sulfate | 4.1 | mg/L | 1.0 | 01/11/16 12:26 | |
| EPA 6010 | Barium | 102 | ug/L | 5.0 | 01/07/16 19:55 | |
| EPA 6010 | Calcium | 13500 | ug/L | 100 | 01/07/16 19:55 | |
| EPA 6020A | Boron | 10.8 | ug/L | 5.0 | 01/08/16 12:23 | |
| EPA 6020A | Lithium | 6.4 | ug/L | 0.50 | 01/08/16 12:23 | |
| EPA 903.1 | Radium-226 | -0.066 ± 0.299 (0.705) C:NA T:89% | pCi/L | | 01/25/16 19:12 | |
| EPA 904.0 | Radium-228 | 0.425 ± 0.376 (0.762) C:86% T:76% | pCi/L | | 01/27/16 16:52 | 2g |
| SM 2540C | Total Dissolved Solids | 259 | mg/L | 25.0 | 01/06/16 10:53 | |
| **92281799005** | **LEACHATE-1** | | | | | |
| EPA 300.0 | Sulfate | 9.9 | mg/L | 1.0 | 01/11/16 12:48 | |
| EPA 6010 | Barium | 34.8 | ug/L | 5.0 | 01/07/16 19:58 | |
| EPA 6010 | Calcium | 10700 | ug/L | 100 | 01/07/16 19:58 | |
| EPA 6010 | Vanadium | 5.6 | ug/L | 5.0 | 01/07/16 19:58 | |
| EPA 6010 | Zinc | 15.2 | ug/L | 10.0 | 01/07/16 19:58 | |
| EPA 6020A | Boron | 34.5 | ug/L | 5.0 | 01/08/16 12:25 | |
| EPA 6020A | Lithium | 2.2 | ug/L | 0.50 | 01/08/16 12:25 | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.398 (0.842) C:NA T:90% | pCi/L | | 01/25/16 19:19 | |
| EPA 904.0 | Radium-228 | 0.497 ± 0.395 (0.782) C:81% T:75% | pCi/L | | 01/27/16 16:52 | 2g |
| SM 2540C | Total Dissolved Solids | 40.0 | mg/L | 25.0 | 01/06/16 10:54 | |
| **92281799006** | **MW-4** | | | | | |
| EPA 300.0 | Chloride | 307 | mg/L | 6.0 | 01/12/16 03:10 | |
| EPA 300.0 | Fluoride | 0.35 | mg/L | 0.10 | 01/11/16 13:11 | |
| EPA 300.0 | Sulfate | 6.3 | mg/L | 1.0 | 01/11/16 13:11 | |



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## SUMMARY OF DETECTION

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92281799006** | **MW-4** | | | | | |
| EPA 6010 | Barium | 176 | ug/L | 5.0 | 01/07/16 20:01 | |
| EPA 6010 | Calcium | 35200 | ug/L | 100 | 01/07/16 20:01 | |
| EPA 6020A | Boron | 7.2 | ug/L | 5.0 | 01/08/16 12:28 | |
| EPA 6020A | Lithium | 23.2 | ug/L | 0.50 | 01/08/16 12:28 | |
| EPA 903.1 | Radium-226 | -0.120 ± 0.374 (0.849) C:NA T:98% | pCi/L | | 01/25/16 19:55 | |
| EPA 904.0 | Radium-228 | 0.481 ± 0.382 (0.758) C:85% T:76% | pCi/L | | 01/27/16 16:52 | 2g |
| SM 2540C | Total Dissolved Solids | 806 | mg/L | 50.0 | 01/06/16 10:55 | |
| **92281799007** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.0592 ± 0.270 (0.550) C:NA T:96% | pCi/L | | 01/25/16 19:01 | |
| EPA 904.0 | Radium-228 | 0.876 ± 0.442 (0.783) C:87% T:79% | pCi/L | | 01/27/16 16:52 | 2g |
| **92281799008** | **EQUIPMENT BLANK** | | | | | |
| EPA 8260 | Methylene Chloride | 4.2 | ug/L | 1.0 | 01/06/16 14:52 | C9 |
| EPA 903.1 | Radium-226 | -0.132 ± 0.301 (0.710) C:NA T:88% | pCi/L | | 01/25/16 19:08 | |
| EPA 904.0 | Radium-228 | 0.491 ± 0.388 (0.766) C:85% T:72% | pCi/L | | 01/27/16 16:52 | 2g |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-2** **Lab ID: 92281799001** Collected: 01/04/16 08:55 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **6.7** | mg/L | 1.0 | 1 | | 01/11/16 10:34 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 10:34 | 16984-48-8 | |
| Sulfate | **9.4** | mg/L | 1.0 | 1 | | 01/11/16 10:34 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-38-2 | |
| Barium | **56.1** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-43-9 | |
| Calcium | **6220** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:07 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-22-4 | |
| Thallium | **11.4** | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-28-0 | M1 |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-62-2 | |
| Zinc | **14.2** | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:40 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **18.2** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:30 | 7440-42-8 | |
| Lithium | **0.78** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:30 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 15:45 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 12:36 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 12:36 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 12:36 | 74-83-9 | M1 |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:36 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 12:36 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-2** **Lab ID: 92281799001** Collected: 01/04/16 08:55 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 12:36 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 12:36 | 74-88-4 | M1 |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:36 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 12:36 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:36 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 12:36 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 112 | % | 70-130 | 1 | | 01/06/16 12:36 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 101 | % | 70-130 | 1 | | 01/06/16 12:36 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 01/06/16 12:36 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **72.0** | mg/L | 25.0 | 1 | | 01/06/16 10:49 | | D6 |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-1** **Lab ID: 92281799002** Collected: 01/04/16 09:35 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **7.6** | mg/L | 1.0 | 1 | | 01/11/16 11:41 | 16887-00-6 | |
| Fluoride | **0.12** | mg/L | 0.10 | 1 | | 01/11/16 11:41 | 16984-48-8 | |
| Sulfate | **18.2** | mg/L | 1.0 | 1 | | 01/11/16 11:41 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-38-2 | |
| Barium | **82.8** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-43-9 | |
| Calcium | **4080** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:16 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-22-4 | |
| Thallium | **12.9** | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-28-0 | |
| Vanadium | **8.9** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-62-2 | |
| Zinc | **12.8** | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:49 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **12.7** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:17 | 7440-42-8 | |
| Lithium | **2.4** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:17 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 15:52 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 12:53 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 12:53 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 12:53 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:53 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 12:53 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-1** **Lab ID: 92281799002** Collected: 01/04/16 09:35 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 12:53 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 12:53 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:53 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 12:53 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:53 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 12:53 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 114 | % | 70-130 | 1 | | 01/06/16 12:53 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 101 | % | 70-130 | 1 | | 01/06/16 12:53 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/06/16 12:53 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **205** | mg/L | 25.0 | 1 | | 01/06/16 10:50 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: BG-1** **Lab ID: 92281799003** Collected: 01/04/16 11:52 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **285** | mg/L | 5.0 | 5 | | 01/12/16 02:41 | 16887-00-6 | |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 01/11/16 12:04 | 16984-48-8 | |
| Sulfate | **19.5** | mg/L | 1.0 | 1 | | 01/11/16 12:04 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-38-2 | |
| Barium | **310** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-43-9 | |
| Calcium | **28600** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:19 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:52 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **7.5** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:20 | 7440-42-8 | |
| Lithium | **15.0** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:20 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 15:54 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 13:27 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 13:27 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 13:27 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 13:27 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 13:27 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: BG-1** **Lab ID: 92281799003** Collected: 01/04/16 11:52 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 13:27 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 13:27 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 13:27 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 13:27 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:27 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 13:27 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 110 | % | 70-130 | 1 | | 01/06/16 13:27 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 01/06/16 13:27 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 01/06/16 13:27 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **643** | mg/L | 25.0 | 1 | | 01/06/16 10:50 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-5** **Lab ID: 92281799004** Collected: 01/04/16 13:25 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **21.9** | mg/L | 1.0 | 1 | | 01/11/16 12:26 | 16887-00-6 | |
| Fluoride | **0.56** | mg/L | 0.10 | 1 | | 01/11/16 12:26 | 16984-48-8 | |
| Sulfate | **4.1** | mg/L | 1.0 | 1 | | 01/11/16 12:26 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-38-2 | |
| Barium | **102** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-43-9 | |
| Calcium | **13500** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:32 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:55 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **10.8** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:23 | 7440-42-8 | |
| Lithium | **6.4** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:23 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 15:57 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 13:44 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 13:44 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 13:44 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 13:44 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 13:44 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-5** **Lab ID: 92281799004** Collected: 01/04/16 13:25 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 13:44 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 13:44 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 13:44 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 13:44 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 13:44 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 13:44 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 110 | % | 70-130 | 1 | | 01/06/16 13:44 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 01/06/16 13:44 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 01/06/16 13:44 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **259** | mg/L | 25.0 | 1 | | 01/06/16 10:53 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: LEACHATE-1** **Lab ID: 92281799005** Collected: 01/04/16 13:45 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/11/16 12:48 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 12:48 | 16984-48-8 | |
| Sulfate | **9.9** | mg/L | 1.0 | 1 | | 01/11/16 12:48 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-38-2 | |
| Barium | **34.8** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-43-9 | |
| Calcium | **10700** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:35 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-28-0 | |
| Vanadium | **5.6** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-62-2 | |
| Zinc | **15.2** | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 19:58 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **34.5** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:25 | 7440-42-8 | |
| Lithium | **2.2** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:25 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:06 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 14:01 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 14:01 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 14:01 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:01 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 14:01 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: LEACHATE-1** **Lab ID: 92281799005** Collected: 01/04/16 13:45 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 14:01 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 14:01 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:01 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 14:01 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:01 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 14:01 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 112 | % | 70-130 | 1 | | 01/06/16 14:01 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 100 | % | 70-130 | 1 | | 01/06/16 14:01 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/06/16 14:01 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **40.0** | mg/L | 25.0 | 1 | | 01/06/16 10:54 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-4** **Lab ID: 92281799006** Collected: 01/04/16 15:15 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **307** | mg/L | 6.0 | 6 | | 01/12/16 03:10 | 16887-00-6 | |
| Fluoride | **0.35** | mg/L | 0.10 | 1 | | 01/11/16 13:11 | 16984-48-8 | |
| Sulfate | **6.3** | mg/L | 1.0 | 1 | | 01/11/16 13:11 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-38-2 | |
| Barium | **176** | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-43-9 | |
| Calcium | **35200** | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:38 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:01 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **7.2** | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:28 | 7440-42-8 | |
| Lithium | **23.2** | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:28 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:09 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 14:18 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 14:18 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 14:18 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:18 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 14:18 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-4** **Lab ID: 92281799006** Collected: 01/04/16 15:15 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 14:18 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 14:18 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:18 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 14:18 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:18 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 14:18 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 110 | % | 70-130 | 1 | | 01/06/16 14:18 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 01/06/16 14:18 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/06/16 14:18 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **806** | mg/L | 50.0 | 1 | | 01/06/16 10:55 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: AMBIENT BLANK** **Lab ID: 92281799007** Collected: 01/04/16 17:00 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/11/16 13:33 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 13:33 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/11/16 13:33 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:45 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:14 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:45 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:45 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:11 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 14:35 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 14:35 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 14:35 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:35 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 14:35 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: AMBIENT BLANK** **Lab ID: 92281799007** Collected: 01/04/16 17:00 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 14:35 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 14:35 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:35 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 14:35 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:35 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 14:35 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 111 | % | 70-130 | 1 | | 01/06/16 14:35 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 01/06/16 14:35 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/06/16 14:35 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/06/16 10:55 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: EQUIPMENT BLANK** **Lab ID: 92281799008** Collected: 01/04/16 17:30 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/11/16 13:55 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 13:55 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/11/16 13:55 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/08/16 15:48 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/06/16 13:55 | 01/07/16 20:17 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/08/16 08:37 | 01/08/16 12:51 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/08/16 08:37 | 01/08/16 12:51 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:13 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 14:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 14:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 14:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 14:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: EQUIPMENT BLANK** **Lab ID: 92281799008** Collected: 01/04/16 17:30 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 14:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 14:52 | 74-88-4 | |
| Methylene Chloride | **4.2** | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-09-2 | C9 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 14:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 14:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 14:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 14:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 111 | % | 70-130 | 1 | | 01/06/16 14:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 01/06/16 14:52 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/06/16 14:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/06/16 10:56 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: TRIP BLANK** **Lab ID: 92281799009** Collected: 01/04/16 00:00 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/06/16 12:19 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/06/16 12:19 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/06/16 12:19 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:19 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/06/16 12:19 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/06/16 12:19 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/06/16 12:19 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/06/16 12:19 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/06/16 12:19 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/06/16 12:19 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/06/16 12:19 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 111 | % | 70-130 | 1 | | 01/06/16 12:19 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: TRIP BLANK** **Lab ID: 92281799009** Collected: 01/04/16 00:00 Received: 01/05/16 12:30 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 01/06/16 12:19 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 01/06/16 12:19 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: GWD/2797 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1644433 — Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 01/11/16 09:49 | |
| Fluoride | mg/L | ND | 0.10 | 01/11/16 09:49 | |
| Sulfate | mg/L | ND | 1.0 | 01/11/16 09:49 | |

LABORATORY CONTROL SAMPLE: 1644434

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 49.0 | 98 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.5 | 99 | 90-110 | |
| Sulfate | mg/L | 50 | 48.1 | 96 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1644435 1644436

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 6.7 | 50 | 50 | 57.2 | 58.2 | 101 | 103 | 90-110 | 2 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.4 | 2.5 | 96 | 97 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 9.4 | 50 | 50 | 59.9 | 60.6 | 101 | 102 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1644437 1644438

| Parameter | Units | 92282212001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 64.1 | 50 | 50 | 114 | 116 | 100 | 103 | 90-110 | 1 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.5 | 2.6 | 98 | 102 | 90-110 | 4 | 20 | |
| Sulfate | mg/L | 46.9 | 50 | 50 | 96.4 | 99.7 | 99 | 106 | 90-110 | 3 | 20 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: MERP/8849 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1643385 | Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 01/11/16 15:40 | |

LABORATORY CONTROL SAMPLE: 1643386

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.5 | 99 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643387 1643388

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.5 | 2.4 | 97 | 94 | 75-125 | 3 | 25 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**

## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: MPRP/20423 — Analysis Method: EPA 6010
QC Batch Method: EPA 3010A — Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1641719 — Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Arsenic | ug/L | ND | 10.0 | 01/07/16 19:34 | |
| Barium | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Beryllium | ug/L | ND | 1.0 | 01/07/16 19:34 | |
| Cadmium | ug/L | ND | 1.0 | 01/07/16 19:34 | |
| Calcium | ug/L | ND | 100 | 01/07/16 19:34 | |
| Chromium | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Cobalt | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Copper | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Lead | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Molybdenum | ug/L | ND | 5.0 | 01/08/16 15:01 | |
| Nickel | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Selenium | ug/L | ND | 10.0 | 01/07/16 19:34 | |
| Silver | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Thallium | ug/L | ND | 5.4 | 01/07/16 19:34 | |
| Vanadium | ug/L | ND | 5.0 | 01/07/16 19:34 | |
| Zinc | ug/L | ND | 10.0 | 01/07/16 19:34 | |

LABORATORY CONTROL SAMPLE: 1641720

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 501 | 100 | 80-120 | |
| Arsenic | ug/L | 500 | 472 | 94 | 80-120 | |
| Barium | ug/L | 500 | 496 | 99 | 80-120 | |
| Beryllium | ug/L | 500 | 495 | 99 | 80-120 | |
| Cadmium | ug/L | 500 | 494 | 99 | 80-120 | |
| Calcium | ug/L | 5000 | 4880 | 98 | 80-120 | |
| Chromium | ug/L | 500 | 488 | 98 | 80-120 | |
| Cobalt | ug/L | 500 | 485 | 97 | 80-120 | |
| Copper | ug/L | 500 | 498 | 100 | 80-120 | |
| Lead | ug/L | 500 | 480 | 96 | 80-120 | |
| Molybdenum | ug/L | 500 | 522 | 104 | 80-120 | |
| Nickel | ug/L | 500 | 489 | 98 | 80-120 | |
| Selenium | ug/L | 500 | 490 | 98 | 80-120 | |
| Silver | ug/L | 250 | 244 | 97 | 80-120 | |
| Thallium | ug/L | 500 | 449 | 90 | 80-120 | |
| Vanadium | ug/L | 500 | 486 | 97 | 80-120 | |
| Zinc | ug/L | 500 | 473 | 95 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1641721 1641722

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 463 | 465 | 93 | 93 | 75-125 | 0 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 443 | 444 | 88 | 89 | 75-125 | 0 | 25 | |
| Barium | ug/L | 56.1 | 500 | 500 | 513 | 519 | 91 | 93 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 458 | 465 | 92 | 93 | 75-125 | 1 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 459 | 461 | 92 | 92 | 75-125 | 0 | 25 | |
| Calcium | ug/L | 6220 | 5000 | 5000 | 10600 | 10500 | 88 | 85 | 75-125 | 1 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 455 | 462 | 91 | 92 | 75-125 | 2 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 455 | 456 | 91 | 91 | 75-125 | 0 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 466 | 472 | 92 | 94 | 75-125 | 1 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 446 | 448 | 89 | 89 | 75-125 | 0 | 25 | |
| Molybdenum | ug/L | ND | 500 | 500 | 514 | 531 | 102 | 105 | 75-125 | 3 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 456 | 459 | 91 | 91 | 75-125 | 1 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 458 | 454 | 92 | 91 | 75-125 | 1 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 225 | 227 | 90 | 91 | 75-125 | 1 | 25 | |
| Thallium | ug/L | 11.4 | 500 | 500 | 353 | 368 | 68 | 71 | 75-125 | 4 | 25 | M1 |
| Vanadium | ug/L | ND | 500 | 500 | 461 | 465 | 91 | 92 | 75-125 | 1 | 25 | |
| Zinc | ug/L | 14.2 | 500 | 500 | 458 | 456 | 89 | 88 | 75-125 | 0 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: MPRP/60800 | Analysis Method: EPA 6020A
QC Batch Method: EPA 3020 | Analysis Description: 6020A Water UPD4
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 2171105 | Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 01/08/16 12:15 | |
| Lithium | ug/L | ND | 0.50 | 01/08/16 12:15 | |

LABORATORY CONTROL SAMPLE: 2171106

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 82.2 | 103 | 80-120 | |
| Lithium | ug/L | 80 | 79.7 | 100 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2171107 2171108

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 18.2 | 80 | 80 | 102 | 103 | 104 | 106 | 80-120 | 1 | 20 | |
| Lithium | ug/L | 0.78 | 80 | 80 | 81.0 | 82.2 | 100 | 102 | 80-120 | 1 | 20 | |

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## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: MSV/35063 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008, 92281799009

METHOD BLANK: 1641479 Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008, 92281799009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 01/06/16 11:45 | |
| 2-Hexanone | ug/L | ND | 5.0 | 01/06/16 11:45 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 01/06/16 11:45 | |
| Acetone | ug/L | ND | 25.0 | 01/06/16 11:45 | |
| Acrylonitrile | ug/L | ND | 10.0 | 01/06/16 11:45 | |
| Benzene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Bromochloromethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Bromoform | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Bromomethane | ug/L | ND | 2.0 | 01/06/16 11:45 | |
| Carbon disulfide | ug/L | ND | 2.0 | 01/06/16 11:45 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Chlorobenzene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Chloroethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Chloroform | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Chloromethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Dibromomethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Ethylbenzene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Iodomethane | ug/L | ND | 5.0 | 01/06/16 11:45 | |
| Methylene Chloride | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Styrene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Toluene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 01/06/16 11:45 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

METHOD BLANK: 1641479 Matrix: Water

Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008, 92281799009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichloroethene | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Trichlorofluoromethane | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Vinyl acetate | ug/L | ND | 2.0 | 01/06/16 11:45 | |
| Vinyl chloride | ug/L | ND | 1.0 | 01/06/16 11:45 | |
| Xylene (Total) | ug/L | ND | 2.0 | 01/06/16 11:45 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 70-130 | 01/06/16 11:45 | |
| 4-Bromofluorobenzene (S) | % | 110 | 70-130 | 01/06/16 11:45 | |
| Toluene-d8 (S) | % | 102 | 70-130 | 01/06/16 11:45 | |

LABORATORY CONTROL SAMPLE: 1641480

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 46.9 | 94 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 46.5 | 93 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 43.2 | 86 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 43.3 | 87 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 42.0 | 84 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 44.2 | 88 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 43.2 | 86 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 41.9 | 84 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 42.2 | 84 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 42.0 | 84 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 44.9 | 90 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 83.2 | 83 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 82.7 | 83 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 88.4 | 88 | 72-135 | |
| Acetone | ug/L | 100 | 88.7 | 89 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 220 | 88 | 40-160 | |
| Benzene | ug/L | 50 | 42.9 | 86 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 44.7 | 89 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 47.7 | 95 | 78-124 | |
| Bromoform | ug/L | 50 | 48.6 | 97 | 71-128 | |
| Bromomethane | ug/L | 50 | 53.0 | 106 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 48.3 | 97 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 48.8 | 98 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 44.0 | 88 | 81-122 | |
| Chloroethane | ug/L | 50 | 46.1 | 92 | 39-148 | |
| Chloroform | ug/L | 50 | 44.9 | 90 | 73-127 | |
| Chloromethane | ug/L | 50 | 41.8 | 84 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 43.4 | 87 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 45.2 | 90 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 48.0 | 96 | 78-125 | |
| Dibromomethane | ug/L | 50 | 48.0 | 96 | 82-120 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

LABORATORY CONTROL SAMPLE: 1641480

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Ethylbenzene | ug/L | 50 | 44.1 | 88 | 79-121 | |
| Iodomethane | ug/L | 100 | 83.8 | 84 | 39-154 | |
| Methylene Chloride | ug/L | 50 | 43.4 | 87 | 64-133 | |
| Styrene | ug/L | 50 | 44.3 | 89 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 45.0 | 90 | 78-122 | |
| Toluene | ug/L | 50 | 45.0 | 90 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 44.1 | 88 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 45.4 | 91 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 46.5 | 93 | 40-160 | |
| Trichloroethene | ug/L | 50 | 45.3 | 91 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 47.7 | 95 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 89.2 | 89 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 43.5 | 87 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 133 | 89 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 96 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 112 | 70-130 | |
| Toluene-d8 (S) | % | | | 101 | 70-130 | |

MATRIX SPIKE SAMPLE: 1641481

| Parameter | Units | 92281799001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 21.9 | 110 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 18.8 | 94 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.5 | 98 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 20.1 | 100 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 18.4 | 92 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 18.5 | 93 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 38.3 | 96 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 39.0 | 98 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 41.0 | 103 | 70-130 | |
| Acetone | ug/L | ND | 40 | 46.4 | 112 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 102 | 102 | 70-130 | |
| Benzene | ug/L | ND | 20 | 19.7 | 99 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 17.8 | 89 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 10.3 | 52 | 70-130 | M1 |
| Carbon disulfide | ug/L | ND | 20 | 20.9 | 105 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.9 | 114 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 19.6 | 98 | 70-146 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

MATRIX SPIKE SAMPLE: 1641481

| Parameter | Units | 92281799001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloroethane | ug/L | ND | 20 | 21.1 | 106 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| Chloromethane | ug/L | ND | 20 | 15.9 | 80 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 27.6 | 69 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 18.8 | 94 | 70-130 | |
| Styrene | ug/L | ND | 20 | 18.9 | 95 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Toluene | ug/L | ND | 20 | 20.6 | 103 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 17.0 | 85 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 20.6 | 103 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 21.9 | 109 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 34.5 | 86 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 19.2 | 96 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 103 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 113 | 70-130 | |
| Toluene-d8 (S) | % | | | | 101 | 70-130 | |

SAMPLE DUPLICATE: 1641482

| Parameter | Units | 92281799002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

SAMPLE DUPLICATE: 1641482

| Parameter | Units | 92281799002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 101 | 101 | 0 | | |
| 4-Bromofluorobenzene (S) | % | 114 | 112 | 2 | | |
| Toluene-d8 (S) | % | 100 | 101 | 1 | | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: WET/42321 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1641514 | Matrix: Water
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 01/06/16 10:48 | |

LABORATORY CONTROL SAMPLE: 1641515

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 256 | 102 | 90-110 | |

SAMPLE DUPLICATE: 1641516

| Parameter | Units | 92281799001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 72.0 | 67.0 | 7 | 5 | D6 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-2** **Lab ID: 92281799001** Collected: 01/04/16 08:55 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.213 ± 0.590 (1.00) C:NA T:60%** | pCi/L | 01/25/16 18:37 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.833 ± 0.990 (2.05) C:88% T:29%** | pCi/L | 01/22/16 13:01 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: SW-1** **Lab ID: 92281799002** Collected: 01/04/16 09:35 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.390 ± 0.510 (0.841)**<br>**C:NA T:76%** | pCi/L | 01/25/16 18:37 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.543 ± 0.472 (0.923)**<br>**C:88% T:57%** | pCi/L | 01/22/16 13:01 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: BG-1** **Lab ID: 92281799003** Collected: 01/04/16 11:52 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.206 ± 0.315 (0.827) C:NA T:96%** | pCi/L | 01/25/16 19:31 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.808 ± 0.449 (0.817) C:81% T:76%** | pCi/L | 01/27/16 16:53 | 15262-20-1 | 2g |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-5** **Lab ID: 92281799004** Collected: 01/04/16 13:25 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.066 ± 0.299 (0.705)**<br>**C:NA T:89%** | pCi/L | 01/25/16 19:12 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.425 ± 0.376 (0.762)**<br>**C:86% T:76%** | pCi/L | 01/27/16 16:52 | 15262-20-1 | 2g |



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# ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: LEACHATE-1** **Lab ID: 92281799005** Collected: 01/04/16 13:45 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.398 (0.842)**<br>**C:NA T:90%** | pCi/L | 01/25/16 19:19 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.497 ± 0.395 (0.782)**<br>**C:81% T:75%** | pCi/L | 01/27/16 16:52 | 15262-20-1 | 2g |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: MW-4** **Lab ID: 92281799006** Collected: 01/04/16 15:15 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.120 ± 0.374 (0.849)**<br>**C:NA T:98%** | pCi/L | 01/25/16 19:55 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.481 ± 0.382 (0.758)**<br>**C:85% T:76%** | pCi/L | 01/27/16 16:52 | 15262-20-1 | 2g |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: AMBIENT BLANK** **Lab ID: 92281799007** Collected: 01/04/16 17:00 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0592 ± 0.270 (0.550)**<br>**C:NA T:96%** | pCi/L | 01/25/16 19:01 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.876 ± 0.442 (0.783)**<br>**C:87% T:79%** | pCi/L | 01/27/16 16:52 | 15262-20-1 | 2g |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

**Sample: EQUIPMENT BLANK** **Lab ID: 92281799008** Collected: 01/04/16 17:30 Received: 01/05/16 12:30 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.132 ± 0.301 (0.710)**<br>**C:NA T:88%** | pCi/L | 01/25/16 19:08 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.491 ± 0.388 (0.766)**<br>**C:85% T:72%** | pCi/L | 01/27/16 16:52 | 15262-20-1 | 2g |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: RADC/27593 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1010908 | Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.298 ± 0.352 (0.553) C:NA T:100% | pCi/L | 01/25/16 18:09 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

QC Batch: RADC/27590 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92281799001, 92281799002, 92281799003, 92281799004, 92281799005, 92281799006, 92281799007, 92281799008

METHOD BLANK: 1010905 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.363 ± 0.421 (0.887) C:91% T:64% | pCi/L | 01/27/16 16:51 | 1g |

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# QUALIFIERS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## WORKORDER QUALIFIERS

WO: 92281799

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

## SAMPLE QUALIFIERS

Sample: 92281799001

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.



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# QUALIFIERS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

## SAMPLE QUALIFIERS

Sample: 92281799002
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799003
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799004
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799005
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799006
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799007
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.
Sample: 92281799008
[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

## ANALYTE QUALIFIERS

| | |
|---|---|
| 1g | This result was obtained after re-ingrowthing and re-analyzing the Method Blank. The initial results was elevated due to the presence of radon daughters. |
| 2g | This result was obtained after re-ingrowthing and re-analyzing this sample and the associated Method Blank. The initial analysis results were elevated due to the presence of radon daughters caused by a ventilation issue. |
| C9 | Common Laboratory Contaminant. |
| D6 | The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92281799001** | **SW-2** | EPA 300.0 | GWD/2797 | | |
| **92281799002** | **SW-1** | EPA 300.0 | GWD/2797 | | |
| **92281799003** | **BG-1** | EPA 300.0 | GWD/2797 | | |
| **92281799004** | **MW-5** | EPA 300.0 | GWD/2797 | | |
| **92281799005** | **LEACHATE-1** | EPA 300.0 | GWD/2797 | | |
| **92281799006** | **MW-4** | EPA 300.0 | GWD/2797 | | |
| **92281799007** | **AMBIENT BLANK** | EPA 300.0 | GWD/2797 | | |
| **92281799008** | **EQUIPMENT BLANK** | EPA 300.0 | GWD/2797 | | |
| **92281799001** | **SW-2** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799002** | **SW-1** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799003** | **BG-1** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799004** | **MW-5** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799005** | **LEACHATE-1** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799006** | **MW-4** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799007** | **AMBIENT BLANK** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799008** | **EQUIPMENT BLANK** | EPA 3010A | MPRP/20423 | EPA 6010 | ICP/18427 |
| **92281799001** | **SW-2** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799002** | **SW-1** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799003** | **BG-1** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799004** | **MW-5** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799005** | **LEACHATE-1** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799006** | **MW-4** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799007** | **AMBIENT BLANK** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799008** | **EQUIPMENT BLANK** | EPA 3020 | MPRP/60800 | EPA 6020A | ICPM/28089 |
| **92281799001** | **SW-2** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799002** | **SW-1** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799003** | **BG-1** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799004** | **MW-5** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799005** | **LEACHATE-1** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799006** | **MW-4** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799007** | **AMBIENT BLANK** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799008** | **EQUIPMENT BLANK** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92281799001** | **SW-2** | EPA 8260 | MSV/35063 | | |
| **92281799002** | **SW-1** | EPA 8260 | MSV/35063 | | |
| **92281799003** | **BG-1** | EPA 8260 | MSV/35063 | | |
| **92281799004** | **MW-5** | EPA 8260 | MSV/35063 | | |
| **92281799005** | **LEACHATE-1** | EPA 8260 | MSV/35063 | | |
| **92281799006** | **MW-4** | EPA 8260 | MSV/35063 | | |
| **92281799007** | **AMBIENT BLANK** | EPA 8260 | MSV/35063 | | |
| **92281799008** | **EQUIPMENT BLANK** | EPA 8260 | MSV/35063 | | |
| **92281799009** | **TRIP BLANK** | EPA 8260 | MSV/35063 | | |
| **92281799001** | **SW-2** | EPA 903.1 | RADC/27593 | | |
| **92281799002** | **SW-1** | EPA 903.1 | RADC/27593 | | |
| **92281799003** | **BG-1** | EPA 903.1 | RADC/27593 | | |
| **92281799004** | **MW-5** | EPA 903.1 | RADC/27593 | | |
| **92281799005** | **LEACHATE-1** | EPA 903.1 | RADC/27593 | | |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92281799

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92281799006** | **MW-4** | EPA 903.1 | RADC/27593 | | |
| **92281799007** | **AMBIENT BLANK** | EPA 903.1 | RADC/27593 | | |
| **92281799008** | **EQUIPMENT BLANK** | EPA 903.1 | RADC/27593 | | |
| **92281799001** | **SW-2** | EPA 904.0 | RADC/27590 | | |
| **92281799002** | **SW-1** | EPA 904.0 | RADC/27590 | | |
| **92281799003** | **BG-1** | EPA 904.0 | RADC/27590 | | |
| **92281799004** | **MW-5** | EPA 904.0 | RADC/27590 | | |
| **92281799005** | **LEACHATE-1** | EPA 904.0 | RADC/27590 | | |
| **92281799006** | **MW-4** | EPA 904.0 | RADC/27590 | | |
| **92281799007** | **AMBIENT BLANK** | EPA 904.0 | RADC/27590 | | |
| **92281799008** | **EQUIPMENT BLANK** | EPA 904.0 | RADC/27590 | | |
| **92281799001** | **SW-2** | SM 2540C | WET/42321 | | |
| **92281799002** | **SW-1** | SM 2540C | WET/42321 | | |
| **92281799003** | **BG-1** | SM 2540C | WET/42321 | | |
| **92281799004** | **MW-5** | SM 2540C | WET/42321 | | |
| **92281799005** | **LEACHATE-1** | SM 2540C | WET/42321 | | |
| **92281799006** | **MW-4** | SM 2540C | WET/42321 | | |
| **92281799007** | **AMBIENT BLANK** | SM 2540C | WET/42321 | | |
| **92281799008** | **EQUIPMENT BLANK** | SM 2540C | WET/42321 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Project #:** WO#: 92281799

92281799

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

**Custody Seal on Cooler/Box Present?** ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

**Packing Material:** ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:

**Thermometer Used:** ☑ T1505 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 1.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C **Date and Initials of Person Examining Contents:** AD 1-5-16

**USDA Regulated Soil** ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☐ Yes | ☑ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☑ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☑ N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐ Yes | ☑ No | ☑ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☑ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WP | ☑ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☑ Yes | ☐ No | ☐ N/A | |
| Samples checked for dechlorization | ☐ Yes | ☐ No | ☑ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager SCURF Review:** DZ **Date:** 1-5-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

2042727

**Section A** Required Client Information:

Company: HDR
Address:
Email To:
Phone: Fax:
Requested Due Date/TAT:

**Section B** Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name: Cherokee-Brickshaven
Project Number:

**Section C** Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92281794 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SW-2 | | G | | | 01/04/16 | 0455 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | SW-1 | | | | | | 0935 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | BG-1 | | | | | | 1152 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 003 |
| 4 | MW-5 | | | | | | 1325 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 5 | Leachate-1 | | | | | | 1345 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 6 | MW-4 | | | | | | 1515 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 006 |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Ambient Blank | | G | | | 01/04/16 | 1700 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 007 |
| 9 | Equipment Blank | | | | | | 1730 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 008 |
| 10 | Trip Blank | | | | | | | | 2 | | | | | | | | | | | 2 | | | | | 009 |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 01/04/16 | 1800 | [illegible] | ~~1-5-16~~ 1-5-16 | 1230 | 1.3 | ✓ | N | ✓ |

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: Clint Sorrell

DATE Signed (MM/DD/YY): 01/04/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

January 28, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures



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cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Charlotte Certification IDs**

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**

816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92282072001** | **MW-6** | Water | 01/05/16 10:40 | 01/06/16 13:50 |
| **92282072002** | **MW-7** | Water | 01/05/16 12:20 | 01/06/16 13:50 |
| **92282072003** | **MW-3** | Water | 01/05/16 14:40 | 01/06/16 13:50 |
| **92282072004** | **AMBIENT BLANK** | Water | 01/05/16 15:15 | 01/06/16 13:50 |
| **92282072005** | **EQUIP. BLANK** | Water | 01/05/16 15:30 | 01/06/16 13:50 |
| **92282072006** | **TRIP BLANK** | Water | 01/05/16 00:00 | 01/06/16 13:50 |



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## SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92282072001** | **MW-6** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020 | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92282072002** | **MW-7** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020 | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92282072003** | **MW-3** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020 | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92282072004** | **AMBIENT BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020 | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92282072005** | **EQUIP. BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020 | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |



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# SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92282072006** | **TRIP BLANK** | EPA 8260 | NB | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92282072001** | **MW-6** | | | | | |
| EPA 300.0 | Chloride | 252 | mg/L | 5.0 | 01/12/16 13:47 | M6 |
| EPA 300.0 | Fluoride | 0.41 | mg/L | 0.10 | 01/12/16 11:11 | |
| EPA 300.0 | Sulfate | 194 | mg/L | 5.0 | 01/12/16 13:47 | M6 |
| EPA 6010 | Barium | 140 | ug/L | 5.0 | 01/11/16 16:45 | |
| EPA 6010 | Calcium | 35600 | ug/L | 100 | 01/11/16 16:45 | |
| EPA 6010 | Molybdenum | 5.4 | ug/L | 5.0 | 01/11/16 16:45 | |
| EPA 6010 | Thallium | 6.2 | ug/L | 5.4 | 01/11/16 16:45 | |
| EPA 6010 | Zinc | 11.3 | ug/L | 10.0 | 01/11/16 16:45 | |
| EPA 6020 | Boron | 8.9 | ug/L | 5.0 | 01/11/16 15:19 | |
| EPA 6020 | Lithium | 55.8 | ug/L | 0.50 | 01/11/16 15:19 | |
| EPA 903.1 | Radium-226 | 0.910 ± 0.637 (0.768) C:NA T:86% | pCi/L | | 01/27/16 17:35 | |
| EPA 904.0 | Radium-228 | 0.555 ± 0.363 (0.689) C:84% T:82% | pCi/L | | 01/27/16 12:46 | |
| SM 2540C | Total Dissolved Solids | 946 | mg/L | 50.0 | 01/07/16 19:57 | |
| **92282072002** | **MW-7** | | | | | |
| EPA 300.0 | Chloride | 403 | mg/L | 9.0 | 01/12/16 15:58 | |
| EPA 300.0 | Fluoride | 0.35 | mg/L | 0.10 | 01/12/16 12:18 | |
| EPA 300.0 | Sulfate | 32.1 | mg/L | 1.0 | 01/12/16 12:18 | |
| EPA 6010 | Barium | 269 | ug/L | 5.0 | 01/11/16 17:04 | |
| EPA 6010 | Calcium | 45100 | ug/L | 100 | 01/11/16 17:04 | |
| EPA 6010 | Molybdenum | 6.4 | ug/L | 5.0 | 01/11/16 17:04 | |
| EPA 6010 | Thallium | 8.0 | ug/L | 5.4 | 01/11/16 17:04 | |
| EPA 6020 | Boron | 48.3 | ug/L | 5.0 | 01/11/16 15:11 | |
| EPA 6020 | Lithium | 21.7 | ug/L | 0.50 | 01/11/16 15:11 | |
| EPA 903.1 | Radium-226 | 0.349 ± 0.565 (0.983) C:NA T:91% | pCi/L | | 01/27/16 17:35 | |
| EPA 904.0 | Radium-228 | 0.243 ± 0.325 (0.693) C:86% T:82% | pCi/L | | 01/27/16 12:46 | |
| SM 2540C | Total Dissolved Solids | 1120 | mg/L | 250 | 01/07/16 19:57 | |
| **92282072003** | **MW-3** | | | | | |
| EPA 300.0 | Chloride | 1270 | mg/L | 25.0 | 01/12/16 16:27 | |
| EPA 300.0 | Fluoride | 0.26 | mg/L | 0.10 | 01/12/16 12:40 | |
| EPA 300.0 | Sulfate | 10 | mg/L | 1.0 | 01/12/16 12:40 | |
| EPA 6010 | Antimony | 9.2 | ug/L | 5.0 | 01/11/16 17:07 | |
| EPA 6010 | Barium | 802 | ug/L | 5.0 | 01/11/16 17:07 | |
| EPA 6010 | Calcium | 188000 | ug/L | 1000 | 01/12/16 13:21 | |
| EPA 6010 | Molybdenum | 10.9 | ug/L | 5.0 | 01/11/16 17:07 | |
| EPA 6020 | Boron | 42.0 | ug/L | 5.0 | 01/11/16 15:14 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92282072003** | **MW-3** | | | | | |
| EPA 6020 | Lithium | 65.4 | ug/L | 0.50 | 01/11/16 15:14 | |
| EPA 903.1 | Radium-226 | 0.213 ± 0.462 (0.852) C:NA T:94% | pCi/L | | 01/27/16 17:35 | |
| EPA 904.0 | Radium-228 | 2.09 ± 0.605 (0.732) C:88% T:84% | pCi/L | | 01/27/16 12:47 | |
| SM 2540C | Total Dissolved Solids | 2490 | mg/L | 250 | 01/07/16 19:58 | |
| **92282072004** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.168 ± 0.509 (0.913) C:NA T:89% | pCi/L | | 01/27/16 17:47 | |
| EPA 904.0 | Radium-228 | 0.401 ± 0.328 (0.652) C:87% T:84% | pCi/L | | 01/27/16 12:47 | |
| **92282072005** | **EQUIP. BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.219 ± 0.430 (0.786) C:NA T:90% | pCi/L | | 01/27/16 17:47 | |
| EPA 904.0 | Radium-228 | 0.277 ± 0.340 (0.719) C:84% T:82% | pCi/L | | 01/27/16 16:51 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-6** **Lab ID: 92282072001** Collected: 01/05/16 10:40 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **252** | mg/L | 5.0 | 5 | | 01/12/16 13:47 | 16887-00-6 | M6 |
| Fluoride | **0.41** | mg/L | 0.10 | 1 | | 01/12/16 11:11 | 16984-48-8 | |
| Sulfate | **194** | mg/L | 5.0 | 5 | | 01/12/16 13:47 | 14808-79-8 | M6 |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-38-2 | |
| Barium | **140** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-43-9 | |
| Calcium | **35600** | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7439-92-1 | |
| Molybdenum | **5.4** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-22-4 | |
| Thallium | **6.2** | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-62-2 | |
| Zinc | **11.3** | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 16:45 | 7440-66-6 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | |
| Boron | **8.9** | ug/L | 5.0 | 1 | 01/11/16 09:02 | 01/11/16 15:19 | 7440-42-8 | |
| Lithium | **55.8** | ug/L | 0.50 | 1 | 01/11/16 09:02 | 01/11/16 15:19 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:16 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 12:25 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 12:25 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 12:25 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 12:25 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 12:25 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-6** **Lab ID: 92282072001** Collected: 01/05/16 10:40 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 12:25 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 12:25 | 74-88-4 | M1 |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 12:25 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 12:25 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:25 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 12:25 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 107 | % | 70-130 | 1 | | 01/11/16 12:25 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 101 | % | 70-130 | 1 | | 01/11/16 12:25 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 12:25 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **946** | mg/L | 50.0 | 1 | | 01/07/16 19:57 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-7** **Lab ID: 92282072002** Collected: 01/05/16 12:20 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **403** | mg/L | 9.0 | 9 | | 01/12/16 15:58 | 16887-00-6 | |
| Fluoride | **0.35** | mg/L | 0.10 | 1 | | 01/12/16 12:18 | 16984-48-8 | |
| Sulfate | **32.1** | mg/L | 1.0 | 1 | | 01/12/16 12:18 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-38-2 | |
| Barium | **269** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-43-9 | |
| Calcium | **45100** | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7439-92-1 | |
| Molybdenum | **6.4** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-22-4 | |
| Thallium | **8.0** | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:04 | 7440-66-6 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | |
| Boron | **48.3** | ug/L | 5.0 | 1 | 01/11/16 09:02 | 01/11/16 15:11 | 7440-42-8 | |
| Lithium | **21.7** | ug/L | 0.50 | 1 | 01/11/16 09:02 | 01/11/16 15:11 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:18 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 12:42 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 12:42 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 12:42 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 12:42 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 12:42 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-7** **Lab ID: 92282072002** Collected: 01/05/16 12:20 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 12:42 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 12:42 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 12:42 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 12:42 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 12:42 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 12:42 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 106 | % | 70-130 | 1 | | 01/11/16 12:42 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 01/11/16 12:42 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 01/11/16 12:42 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **1120** | mg/L | 250 | 1 | | 01/07/16 19:57 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-3** **Lab ID: 92282072003** Collected: 01/05/16 14:40 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **1270** | mg/L | 25.0 | 25 | | 01/12/16 16:27 | 16887-00-6 | |
| Fluoride | **0.26** | mg/L | 0.10 | 1 | | 01/12/16 12:40 | 16984-48-8 | |
| Sulfate | **10** | mg/L | 1.0 | 1 | | 01/12/16 12:40 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **9.2** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-38-2 | |
| Barium | **802** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-43-9 | |
| Calcium | **188000** | ug/L | 1000 | 10 | 01/08/16 18:00 | 01/12/16 13:21 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7439-92-1 | |
| Molybdenum | **10.9** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:07 | 7440-66-6 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | |
| Boron | **42.0** | ug/L | 5.0 | 1 | 01/11/16 09:02 | 01/11/16 15:14 | 7440-42-8 | |
| Lithium | **65.4** | ug/L | 0.50 | 1 | 01/11/16 09:02 | 01/11/16 15:14 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:20 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 13:16 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 13:16 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 13:16 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:16 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 13:16 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-3** **Lab ID: 92282072003** Collected: 01/05/16 14:40 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 13:16 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 13:16 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:16 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 13:16 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:16 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 13:16 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 107 | % | 70-130 | 1 | | 01/11/16 13:16 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 01/11/16 13:16 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 01/11/16 13:16 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2490** | mg/L | 250 | 1 | | 01/07/16 19:58 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: AMBIENT BLANK** **Lab ID: 92282072004** Collected: 01/05/16 15:15 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/12/16 13:03 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/12/16 13:03 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/12/16 13:03 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:11 | 7440-66-6 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/11/16 09:02 | 01/11/16 15:17 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/11/16 09:02 | 01/11/16 15:17 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:23 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 13:33 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 13:33 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 13:33 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:33 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 13:33 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: AMBIENT BLANK** **Lab ID: 92282072004** Collected: 01/05/16 15:15 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 13:33 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 13:33 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:33 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 13:33 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:33 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 13:33 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 108 | % | 70-130 | 1 | | 01/11/16 13:33 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 01/11/16 13:33 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 01/11/16 13:33 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/07/16 19:58 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: EQUIP. BLANK** **Lab ID: 92282072005** Collected: 01/05/16 15:30 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/12/16 13:25 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/12/16 13:25 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/12/16 13:25 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:14 | 7440-66-6 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/11/16 09:02 | 01/11/16 14:43 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/11/16 09:02 | 01/11/16 14:43 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 18:00 | 01/11/16 16:25 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 13:50 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 13:50 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 13:50 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:50 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 13:50 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: EQUIP. BLANK** **Lab ID: 92282072005** Collected: 01/05/16 15:30 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 13:50 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 13:50 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 13:50 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 13:50 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 13:50 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 13:50 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 106 | % | 70-130 | 1 | | 01/11/16 13:50 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 105 | % | 70-130 | 1 | | 01/11/16 13:50 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/11/16 13:50 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/07/16 19:58 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: TRIP BLANK** **Lab ID: 92282072006** Collected: 01/05/16 00:00 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 14:08 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 14:08 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 14:08 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:08 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 14:08 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 14:08 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 14:08 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:08 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 14:08 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:08 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 14:08 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 108 | % | 70-130 | 1 | | 01/11/16 14:08 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: TRIP BLANK** **Lab ID: 92282072006** Collected: 01/05/16 00:00 Received: 01/06/16 13:50 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 01/11/16 14:08 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 14:08 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: GWD/2799 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1644989 — Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 01/12/16 10:26 | |
| Fluoride | mg/L | ND | 0.10 | 01/12/16 10:26 | |
| Sulfate | mg/L | ND | 1.0 | 01/12/16 10:26 | |

LABORATORY CONTROL SAMPLE: 1644990

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 50.3 | 101 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.6 | 102 | 90-110 | |
| Sulfate | mg/L | 50 | 48.9 | 98 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1644991 — 1644992

| Parameter | Units | 92282072001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 252 | 50 | 50 | 302 | 287 | 100 | 69 | 90-110 | 5 | 20 | M6 |
| Fluoride | mg/L | 0.41 | 2.5 | 2.5 | 2.9 | 2.9 | 99 | 98 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 194 | 50 | 50 | 243 | 231 | 98 | 75 | 90-110 | 5 | 20 | M6 |

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## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: MERP/8849 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1643385 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 01/11/16 15:40 | |

LABORATORY CONTROL SAMPLE: 1643386

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.5 | 99 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643387 1643388

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.5 | 2.4 | 97 | 94 | 75-125 | 3 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: MPRP/20439 Analysis Method: EPA 6010
QC Batch Method: EPA 3010A Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1643941 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Arsenic | ug/L | ND | 10.0 | 01/11/16 16:39 | |
| Barium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Beryllium | ug/L | ND | 1.0 | 01/11/16 16:39 | |
| Cadmium | ug/L | ND | 1.0 | 01/11/16 16:39 | |
| Calcium | ug/L | ND | 100 | 01/11/16 16:39 | |
| Chromium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Cobalt | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Copper | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Lead | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Molybdenum | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Nickel | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Selenium | ug/L | ND | 10.0 | 01/11/16 16:39 | |
| Silver | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Thallium | ug/L | ND | 5.4 | 01/11/16 16:39 | |
| Vanadium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Zinc | ug/L | ND | 10.0 | 01/11/16 16:39 | |

LABORATORY CONTROL SAMPLE: 1643942

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 496 | 99 | 80-120 | |
| Arsenic | ug/L | 500 | 466 | 93 | 80-120 | |
| Barium | ug/L | 500 | 457 | 91 | 80-120 | |
| Beryllium | ug/L | 500 | 452 | 90 | 80-120 | |
| Cadmium | ug/L | 500 | 467 | 93 | 80-120 | |
| Calcium | ug/L | 5000 | 4760 | 95 | 80-120 | |
| Chromium | ug/L | 500 | 454 | 91 | 80-120 | |
| Cobalt | ug/L | 500 | 473 | 95 | 80-120 | |
| Copper | ug/L | 500 | 463 | 93 | 80-120 | |
| Lead | ug/L | 500 | 467 | 93 | 80-120 | |
| Molybdenum | ug/L | 500 | 507 | 101 | 80-120 | |
| Nickel | ug/L | 500 | 468 | 94 | 80-120 | |
| Selenium | ug/L | 500 | 467 | 93 | 80-120 | |
| Silver | ug/L | 250 | 236 | 94 | 80-120 | |
| Thallium | ug/L | 500 | 450 | 90 | 80-120 | |
| Vanadium | ug/L | 500 | 458 | 92 | 80-120 | |
| Zinc | ug/L | 500 | 467 | 93 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643943 1643944

| Parameter | Units | 92282072001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 520 | 521 | 103 | 104 | 75-125 | 0 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 498 | 497 | 99 | 99 | 75-125 | 0 | 25 | |
| Barium | ug/L | 140 | 500 | 500 | 623 | 617 | 97 | 95 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 482 | 478 | 96 | 96 | 75-125 | 1 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 490 | 491 | 98 | 98 | 75-125 | 0 | 25 | |
| Calcium | ug/L | 35600 | 5000 | 5000 | 41500 | 40900 | 118 | 107 | 75-125 | 1 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 477 | 477 | 95 | 95 | 75-125 | 0 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 480 | 481 | 96 | 96 | 75-125 | 0 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 494 | 492 | 99 | 98 | 75-125 | 0 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 464 | 465 | 93 | 93 | 75-125 | 0 | 25 | |
| Molybdenum | ug/L | 5.4 | 500 | 500 | 539 | 545 | 107 | 108 | 75-125 | 1 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 476 | 477 | 95 | 95 | 75-125 | 0 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 490 | 491 | 98 | 98 | 75-125 | 0 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 250 | 250 | 100 | 100 | 75-125 | 0 | 25 | |
| Thallium | ug/L | 6.2 | 500 | 500 | 438 | 450 | 86 | 89 | 75-125 | 3 | 25 | |
| Vanadium | ug/L | ND | 500 | 500 | 492 | 493 | 98 | 99 | 75-125 | 0 | 25 | |
| Zinc | ug/L | 11.3 | 500 | 500 | 497 | 497 | 97 | 97 | 75-125 | 0 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: MPRP/60857 Analysis Method: EPA 6020
QC Batch Method: EPA 3020 Analysis Description: 6020 MET
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 2172406 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 01/11/16 15:06 | |
| Lithium | ug/L | ND | 0.50 | 01/11/16 15:06 | |

LABORATORY CONTROL SAMPLE: 2172407

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 89.0 | 111 | 80-120 | |
| Lithium | ug/L | 80 | 90.7 | 113 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2172408 2172409

| Parameter | Units | 92282072001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 8.9 | 80 | 80 | 96.2 | 95.0 | 109 | 108 | 80-120 | 1 | 20 | |
| Lithium | ug/L | 55.8 | 80 | 80 | 145 | 147 | 111 | 114 | 80-120 | 2 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: MSV/35118 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005, 92282072006

METHOD BLANK: 1644486 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005, 92282072006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| 2-Hexanone | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| Acetone | ug/L | ND | 25.0 | 01/11/16 10:59 | |
| Acrylonitrile | ug/L | ND | 10.0 | 01/11/16 10:59 | |
| Benzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromochloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromoform | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromomethane | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Carbon disulfide | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloroform | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Dibromomethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Ethylbenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Iodomethane | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| Methylene Chloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Styrene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Toluene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Trichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

METHOD BLANK: 1644486 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005, 92282072006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Vinyl acetate | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Vinyl chloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Xylene (Total) | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| 1,2-Dichloroethane-d4 (S) | % | 98 | 70-130 | 01/11/16 10:59 | |
| 4-Bromofluorobenzene (S) | % | 105 | 70-130 | 01/11/16 10:59 | |
| Toluene-d8 (S) | % | 100 | 70-130 | 01/11/16 10:59 | |

LABORATORY CONTROL SAMPLE: 1644487

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 50.1 | 100 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 49.4 | 99 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 51.9 | 104 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 48.7 | 97 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 49.5 | 99 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 49.0 | 98 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 50.9 | 102 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 49.5 | 99 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.9 | 90 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 45.4 | 91 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 50.7 | 101 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 97.0 | 97 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 102 | 102 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 99.0 | 99 | 72-135 | |
| Acetone | ug/L | 100 | 107 | 107 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 246 | 99 | 40-160 | |
| Benzene | ug/L | 50 | 48.9 | 98 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 50.6 | 101 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 50.0 | 100 | 78-124 | |
| Bromoform | ug/L | 50 | 45.0 | 90 | 71-128 | |
| Bromomethane | ug/L | 50 | 42.5 | 85 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 55.4 | 111 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 51.0 | 102 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 50.4 | 101 | 81-122 | |
| Chloroethane | ug/L | 50 | 42.7 | 85 | 39-148 | |
| Chloroform | ug/L | 50 | 48.6 | 97 | 73-127 | |
| Chloromethane | ug/L | 50 | 44.8 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 47.8 | 96 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.3 | 101 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 52.6 | 105 | 78-125 | |
| Dibromomethane | ug/L | 50 | 50.2 | 100 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 49.5 | 99 | 79-121 | |
| Iodomethane | ug/L | 100 | 76.3 | 76 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

LABORATORY CONTROL SAMPLE: 1644487

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 44.4 | 89 | 64-133 | |
| Styrene | ug/L | 50 | 51.1 | 102 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 51.5 | 103 | 78-122 | |
| Toluene | ug/L | 50 | 48.8 | 98 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 47.5 | 95 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 50.5 | 101 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 50.6 | 101 | 40-160 | |
| Trichloroethene | ug/L | 50 | 49.3 | 99 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 48.8 | 98 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 100 | 100 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 50.6 | 101 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 149 | 99 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 94 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 110 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1644488

| Parameter | Units | 92282072001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 24.6 | 123 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 21.4 | 107 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 23.0 | 115 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 23.0 | 115 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 21.9 | 110 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 21.3 | 106 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 22.1 | 111 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 44.1 | 110 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 46.0 | 115 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 46.9 | 117 | 70-130 | |
| Acetone | ug/L | ND | 40 | 50.1 | 125 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 112 | 112 | 70-130 | |
| Benzene | ug/L | ND | 20 | 21.6 | 108 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 22.3 | 111 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 20.1 | 101 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 25.8 | 129 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 22.2 | 111 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 20.8 | 104 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

MATRIX SPIKE SAMPLE: 1644488

| Parameter | Units | 92282072001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 22.7 | 113 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 22.7 | 114 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 26.5 | 66 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 22.5 | 113 | 70-130 | |
| Styrene | ug/L | ND | 20 | 21.9 | 109 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| Toluene | ug/L | ND | 20 | 21.4 | 107 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 22.5 | 112 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 22.4 | 112 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 24.4 | 122 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 40.1 | 100 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 108 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 108 | 70-130 | |
| Toluene-d8 (S) | % | | | | 98 | 70-130 | |

SAMPLE DUPLICATE: 1644489

| Parameter | Units | 92282072002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

SAMPLE DUPLICATE: 1644489

| Parameter | Units | 92282072002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 104 | 103 | 1 | | |
| 4-Bromofluorobenzene (S) | % | 106 | 109 | 3 | | |
| Toluene-d8 (S) | % | 99 | 101 | 1 | | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: WET/42357 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1643261 Matrix: Water
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 01/07/16 19:55 | |

LABORATORY CONTROL SAMPLE: 1643262

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 254 | 102 | 90-110 | |

SAMPLE DUPLICATE: 1643263

| Parameter | Units | 92281875001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 3010 | 2520 | 18 | 5 | D6 |

SAMPLE DUPLICATE: 1643264

| Parameter | Units | 92281884001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 327 | 347 | 6 | 5 | D6 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-6** **Lab ID: 92282072001** Collected: 01/05/16 10:40 Received: 01/06/16 13:50 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.910 ± 0.637 (0.768)**<br>**C:NA T:86%** | pCi/L | 01/27/16 17:35 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.555 ± 0.363 (0.689)**<br>**C:84% T:82%** | pCi/L | 01/27/16 12:46 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-7** **Lab ID: 92282072002** Collected: 01/05/16 12:20 Received: 01/06/16 13:50 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.349 ± 0.565 (0.983)**<br>**C:NA T:91%** | pCi/L | 01/27/16 17:35 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.243 ± 0.325 (0.693)**<br>**C:86% T:82%** | pCi/L | 01/27/16 12:46 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: MW-3** **Lab ID: 92282072003** Collected: 01/05/16 14:40 Received: 01/06/16 13:50 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.213 ± 0.462 (0.852)**<br>**C:NA T:94%** | pCi/L | 01/27/16 17:35 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **2.09 ± 0.605 (0.732)**<br>**C:88% T:84%** | pCi/L | 01/27/16 12:47 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: AMBIENT BLANK** **Lab ID: 92282072004** Collected: 01/05/16 15:15 Received: 01/06/16 13:50 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.168 ± 0.509 (0.913) C:NA T:89%** | pCi/L | 01/27/16 17:47 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.401 ± 0.328 (0.652) C:87% T:84%** | pCi/L | 01/27/16 12:47 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

**Sample: EQUIP. BLANK** **Lab ID: 92282072005** Collected: 01/05/16 15:30 Received: 01/06/16 13:50 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.219 ± 0.430 (0.786)**<br>**C:NA T:90%** | pCi/L | 01/27/16 17:47 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.277 ± 0.340 (0.719)**<br>**C:84% T:82%** | pCi/L | 01/27/16 16:51 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: RADC/27603 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1010918 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.0936 ± 0.319 (0.721) C:83% T:80% | pCi/L | 01/27/16 12:45 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

QC Batch: RADC/27599 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92282072001, 92282072002, 92282072003, 92282072004, 92282072005

METHOD BLANK: 1010914 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.236 ± 0.360 (0.578) C:NA T:94% | pCi/L | 01/27/16 17:47 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALIFIERS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## SAMPLE QUALIFIERS

Sample: 92282072001

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

Sample: 92282072002

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

Sample: 92282072003

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.



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# QUALIFIERS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

## SAMPLE QUALIFIERS

Sample: 92282072004

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

Sample: 92282072005

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

## ANALYTE QUALIFIERS

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282072

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92282072001** | **MW-6** | EPA 300.0 | GWD/2799 | | |
| **92282072002** | **MW-7** | EPA 300.0 | GWD/2799 | | |
| **92282072003** | **MW-3** | EPA 300.0 | GWD/2799 | | |
| **92282072004** | **AMBIENT BLANK** | EPA 300.0 | GWD/2799 | | |
| **92282072005** | **EQUIP. BLANK** | EPA 300.0 | GWD/2799 | | |
| **92282072001** | **MW-6** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282072002** | **MW-7** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282072003** | **MW-3** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282072004** | **AMBIENT BLANK** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282072005** | **EQUIP. BLANK** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282072001** | **MW-6** | EPA 3020 | MPRP/60857 | EPA 6020 | ICPM/28105 |
| **92282072002** | **MW-7** | EPA 3020 | MPRP/60857 | EPA 6020 | ICPM/28105 |
| **92282072003** | **MW-3** | EPA 3020 | MPRP/60857 | EPA 6020 | ICPM/28105 |
| **92282072004** | **AMBIENT BLANK** | EPA 3020 | MPRP/60857 | EPA 6020 | ICPM/28105 |
| **92282072005** | **EQUIP. BLANK** | EPA 3020 | MPRP/60857 | EPA 6020 | ICPM/28105 |
| **92282072001** | **MW-6** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92282072002** | **MW-7** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92282072003** | **MW-3** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92282072004** | **AMBIENT BLANK** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92282072005** | **EQUIP. BLANK** | EPA 7470 | MERP/8849 | EPA 7470 | MERC/8501 |
| **92282072001** | **MW-6** | EPA 8260 | MSV/35118 | | |
| **92282072002** | **MW-7** | EPA 8260 | MSV/35118 | | |
| **92282072003** | **MW-3** | EPA 8260 | MSV/35118 | | |
| **92282072004** | **AMBIENT BLANK** | EPA 8260 | MSV/35118 | | |
| **92282072005** | **EQUIP. BLANK** | EPA 8260 | MSV/35118 | | |
| **92282072006** | **TRIP BLANK** | EPA 8260 | MSV/35118 | | |
| **92282072001** | **MW-6** | EPA 903.1 | RADC/27599 | | |
| **92282072002** | **MW-7** | EPA 903.1 | RADC/27599 | | |
| **92282072003** | **MW-3** | EPA 903.1 | RADC/27599 | | |
| **92282072004** | **AMBIENT BLANK** | EPA 903.1 | RADC/27599 | | |
| **92282072005** | **EQUIP. BLANK** | EPA 903.1 | RADC/27599 | | |
| **92282072001** | **MW-6** | EPA 904.0 | RADC/27603 | | |
| **92282072002** | **MW-7** | EPA 904.0 | RADC/27603 | | |
| **92282072003** | **MW-3** | EPA 904.0 | RADC/27603 | | |
| **92282072004** | **AMBIENT BLANK** | EPA 904.0 | RADC/27603 | | |
| **92282072005** | **EQUIP. BLANK** | EPA 904.0 | RADC/27603 | | |
| **92282072001** | **MW-6** | SM 2540C | WET/42357 | | |
| **92282072002** | **MW-7** | SM 2540C | WET/42357 | | |
| **92282072003** | **MW-3** | SM 2540C | WET/42357 | | |
| **92282072004** | **AMBIENT BLANK** | SM 2540C | WET/42357 | | |
| **92282072005** | **EQUIP. BLANK** | SM 2540C | WET/42357 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Project #:** WO# : 92282072

92282072

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

**Custody Seal on Cooler/Box Present?** ☐ Yes ☑ No **Seals Intact?** ☑ Yes ☐ No

**Packing Material:** ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:

**Thermometer Used:** ☑ T1505

**Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 4.5

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C

**Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

**USDA Regulated Soil** ( ☑ N/A, water sample)

**Date and Initials of Person Examining Contents:** 1-6-16 KW

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐ Yes | ☐ No | ☑ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☐ No | ☑ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? | ☑ Yes | ☐ No | ☐ N/A | 12. |
| -Includes Date/Time/ID/Analysis Matrix: WT | | | | |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☑ Yes | ☐ No | ☐ N/A | |
| Samples checked for dechlorization | ☑ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☑ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: Date/Time:

**Field Data Required?** ☐ Yes ☐ No

Comments/Resolution:

**Project Manager SCURF Review:** **Date:** 1-7-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Offi hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of
2042730

**Section A** Required Client Information:
Company: HDR
Address:
Email To:
Phone: Fax:
Requested Due Date/TAT:

**Section B** Required Project Information:
Report To:
Copy To:
Purchase Order No.:
Project Name: Chapman - Brickhaven
Project Number:

**Section C** Invoice Information:
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**
☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | Metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-6 | | G | | | 01/05/16 | 1040 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | MW-7 | | | | | | 1220 | | 1 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | MW-3 | | | | | | 1440 | | | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 003 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Ambient Blank | | G | | | 01/05/16 | 1515 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 6 | Equip. Blank | | | | | | 1530 | | 1 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 7 | Trip Blank | | | | | | | | 2 | | | | | | | | | | | 2 | | | | | 006 |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

92282072

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 01/05/16 | 1700 | [illegible] PACE HVL | 1-6-16 | 1350 | 45 | Y | N | Y |
| | | | | ~~[illegible] PACE HVL~~ | 1-6-16 | 1350 | 45 | Y | N | Y |
| | | | | [illegible] 1-8-16 | | | | | | |

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Clint Sorrell
SIGNATURE of SAMPLER: Clint Sorrell
DATE Signed (MM/DD/YY): 01/05/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

January 27, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on January 07, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Charlotte Certification IDs**

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**

816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92282241001** | **MW-8** | Water | 01/06/16 10:50 | 01/07/16 08:43 |
| **92282241002** | **MW-1** | Water | 01/06/16 13:40 | 01/07/16 08:43 |
| **92282241003** | **MW-2** | Water | 01/06/16 17:20 | 01/07/16 08:43 |
| **92282241004** | **MW-1 DUP.** | Water | 01/06/16 14:15 | 01/07/16 08:43 |
| **92282241005** | **AMBIENT BLANK** | Water | 01/06/16 17:00 | 01/07/16 08:43 |
| **92282241006** | **EQUIP. BLANK** | Water | 01/06/16 17:30 | 01/07/16 08:43 |
| **92282241007** | **TRIP BLANK** | Water | 01/06/16 00:00 | 01/07/16 08:43 |



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# SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92282241001** | **MW-8** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241002** | **MW-1** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241003** | **MW-2** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241004** | **MW-1 DUP.** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241005** | **AMBIENT BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241006** | **EQUIP. BLANK** | EPA 300.0 | EIC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020A | TT3 | 2 | PASI-M |
| | | EPA 7470 | SH1 | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92282241007** | **TRIP BLANK** | EPA 8260 | NB | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92282241001** | **MW-8** | | | | | |
| EPA 300.0 | Chloride | 755 | mg/L | 15.0 | 01/12/16 03:39 | |
| EPA 300.0 | Sulfate | 5.5 | mg/L | 1.0 | 01/11/16 15:25 | |
| EPA 6010 | Antimony | 7.6 | ug/L | 5.0 | 01/11/16 17:17 | |
| EPA 6010 | Barium | 1430 | ug/L | 5.0 | 01/11/16 17:17 | |
| EPA 6010 | Calcium | 162000 | ug/L | 1000 | 01/12/16 13:25 | |
| EPA 6010 | Zinc | 18.7 | ug/L | 10.0 | 01/11/16 17:17 | |
| EPA 6020A | Boron | 9.2 | ug/L | 5.0 | 01/11/16 14:19 | |
| EPA 6020A | Lithium | 39.6 | ug/L | 0.50 | 01/11/16 14:19 | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.358 (0.577) C:NA T:92% | pCi/L | | 01/26/16 19:02 | |
| EPA 904.0 | Radium-228 | 0.864 ± 0.364 (0.582) C:92% T:86% | pCi/L | | 01/26/16 12:24 | |
| SM 2540C | Total Dissolved Solids | 1410 | mg/L | 250 | 01/09/16 11:51 | |
| **92282241002** | **MW-1** | | | | | |
| EPA 300.0 | Chloride | 446 | mg/L | 9.0 | 01/12/16 04:07 | |
| EPA 300.0 | Fluoride | 0.14 | mg/L | 0.10 | 01/11/16 15:48 | |
| EPA 300.0 | Sulfate | 11.2 | mg/L | 1.0 | 01/11/16 15:48 | |
| EPA 6010 | Barium | 220 | ug/L | 5.0 | 01/11/16 17:20 | |
| EPA 6010 | Calcium | 108000 | ug/L | 1000 | 01/12/16 13:28 | |
| EPA 6010 | Vanadium | 6.2 | ug/L | 5.0 | 01/11/16 17:20 | |
| EPA 6010 | Zinc | 13.3 | ug/L | 10.0 | 01/11/16 17:20 | |
| EPA 6020A | Boron | 9.6 | ug/L | 5.0 | 01/11/16 14:11 | |
| EPA 6020A | Lithium | 30.1 | ug/L | 0.50 | 01/11/16 14:11 | |
| EPA 903.1 | Radium-226 | 0.209 ± 0.361 (0.646) C:NA T:92% | pCi/L | | 01/26/16 20:01 | |
| EPA 904.0 | Radium-228 | 0.455 ± 0.314 (0.604) C:94% T:83% | pCi/L | | 01/26/16 12:24 | |
| SM 2540C | Total Dissolved Solids | 700 | mg/L | 250 | 01/09/16 11:52 | |
| **92282241003** | **MW-2** | | | | | |
| EPA 300.0 | Chloride | 910 | mg/L | 20.0 | 01/12/16 04:35 | |
| EPA 300.0 | Fluoride | 0.29 | mg/L | 0.10 | 01/11/16 16:10 | |
| EPA 300.0 | Sulfate | 228 | mg/L | 20.0 | 01/12/16 04:35 | |
| EPA 6010 | Antimony | 8.7 | ug/L | 5.0 | 01/11/16 17:23 | |
| EPA 6010 | Barium | 262 | ug/L | 5.0 | 01/11/16 17:23 | |
| EPA 6010 | Calcium | 188000 | ug/L | 1000 | 01/12/16 13:31 | |
| EPA 6010 | Chromium | 15.8 | ug/L | 5.0 | 01/11/16 17:23 | |
| EPA 6010 | Molybdenum | 18.1 | ug/L | 5.0 | 01/11/16 17:23 | |
| EPA 6010 | Nickel | 8.7 | ug/L | 5.0 | 01/11/16 17:23 | |
| EPA 6020A | Boron | 37.8 | ug/L | 5.0 | 01/11/16 14:14 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92282241003** | **MW-2** | | | | | |
| EPA 6020A | Lithium | 144 | ug/L | 0.50 | 01/11/16 14:14 | |
| EPA 903.1 | Radium-226 | 0.716 ± 0.532 (0.665) C:NA T:89% | pCi/L | | 01/26/16 19:15 | |
| EPA 904.0 | Radium-228 | 1.69 ± 0.536 (0.720) C:92% T:78% | pCi/L | | 01/26/16 12:24 | |
| SM 2540C | Total Dissolved Solids | 2480 | mg/L | 250 | 01/09/16 11:52 | |
| **92282241004** | **MW-1 DUP.** | | | | | |
| EPA 300.0 | Chloride | 447 | mg/L | 9.0 | 01/12/16 05:04 | |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 01/11/16 16:32 | |
| EPA 300.0 | Sulfate | 11.0 | mg/L | 1.0 | 01/11/16 16:32 | |
| EPA 6010 | Barium | 228 | ug/L | 5.0 | 01/11/16 17:26 | |
| EPA 6010 | Calcium | 116000 | ug/L | 1000 | 01/12/16 13:34 | |
| EPA 6010 | Vanadium | 6.7 | ug/L | 5.0 | 01/11/16 17:26 | |
| EPA 6010 | Zinc | 13.9 | ug/L | 10.0 | 01/11/16 17:26 | |
| EPA 6020A | Boron | 9.6 | ug/L | 5.0 | 01/11/16 14:17 | |
| EPA 6020A | Lithium | 30.7 | ug/L | 0.50 | 01/11/16 14:17 | |
| EPA 903.1 | Radium-226 | 0.0716 ± 0.327 (0.194) C:NA T:90% | pCi/L | | 01/26/16 19:28 | |
| EPA 904.0 | Radium-228 | 0.627 ± 0.323 (0.565) C:92% T:87% | pCi/L | | 01/26/16 12:24 | |
| SM 2540C | Total Dissolved Solids | 950 | mg/L | 250 | 01/09/16 11:52 | |
| **92282241005** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.435 (0.919) C:NA T:94% | pCi/L | | 01/26/16 19:28 | |
| EPA 904.0 | Radium-228 | 0.119 ± 0.306 (0.682) C:90% T:81% | pCi/L | | 01/26/16 16:14 | |
| **92282241006** | **EQUIP. BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.545 ± 0.409 (0.211) C:NA T:86% | pCi/L | | 01/26/16 19:40 | |
| EPA 904.0 | Radium-228 | 0.100 ± 0.285 (0.640) C:91% T:84% | pCi/L | | 01/26/16 16:14 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92282241007** | **TRIP BLANK** | | | | | |
| EPA 8260 | Methylene Chloride | 1.1 | ug/L | 1.0 | 01/11/16 16:08 | C9 |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-8** **Lab ID: 92282241001** Collected: 01/06/16 10:50 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **755** | mg/L | 15.0 | 15 | | 01/12/16 03:39 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 15:25 | 16984-48-8 | |
| Sulfate | **5.5** | mg/L | 1.0 | 1 | | 01/11/16 15:25 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **7.6** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-38-2 | |
| Barium | **1430** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-43-9 | |
| Calcium | **162000** | ug/L | 1000 | 10 | 01/08/16 18:00 | 01/12/16 13:25 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-62-2 | |
| Zinc | **18.7** | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:17 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **9.2** | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:19 | 7440-42-8 | |
| Lithium | **39.6** | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:19 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:39 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 14:25 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 14:25 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 14:25 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:25 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 14:25 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-8** **Lab ID: 92282241001** Collected: 01/06/16 10:50 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 14:25 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 14:25 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:25 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 14:25 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:25 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 14:25 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 107 | % | 70-130 | 1 | | 01/11/16 14:25 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 105 | % | 70-130 | 1 | | 01/11/16 14:25 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 14:25 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **1410** | mg/L | 250 | 1 | | 01/09/16 11:51 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1** **Lab ID: 92282241002** Collected: 01/06/16 13:40 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **446** | mg/L | 9.0 | 9 | | 01/12/16 04:07 | 16887-00-6 | |
| Fluoride | **0.14** | mg/L | 0.10 | 1 | | 01/11/16 15:48 | 16984-48-8 | |
| Sulfate | **11.2** | mg/L | 1.0 | 1 | | 01/11/16 15:48 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-38-2 | |
| Barium | **220** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-43-9 | |
| Calcium | **108000** | ug/L | 1000 | 10 | 01/08/16 18:00 | 01/12/16 13:28 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-28-0 | |
| Vanadium | **6.2** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-62-2 | |
| Zinc | **13.3** | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:20 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **9.6** | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:11 | 7440-42-8 | |
| Lithium | **30.1** | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:11 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:41 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 14:42 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 14:42 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 14:42 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:42 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 14:42 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1** **Lab ID: 92282241002** Collected: 01/06/16 13:40 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 14:42 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 14:42 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:42 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 14:42 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:42 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 14:42 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 109 | % | 70-130 | 1 | | 01/11/16 14:42 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 106 | % | 70-130 | 1 | | 01/11/16 14:42 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 14:42 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **700** | mg/L | 250 | 1 | | 01/09/16 11:52 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-2** **Lab ID: 92282241003** Collected: 01/06/16 17:20 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **910** | mg/L | 20.0 | 20 | | 01/12/16 04:35 | 16887-00-6 | |
| Fluoride | **0.29** | mg/L | 0.10 | 1 | | 01/11/16 16:10 | 16984-48-8 | |
| Sulfate | **228** | mg/L | 20.0 | 20 | | 01/12/16 04:35 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **8.7** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-38-2 | |
| Barium | **262** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-43-9 | |
| Calcium | **188000** | ug/L | 1000 | 10 | 01/08/16 18:00 | 01/12/16 13:31 | 7440-70-2 | |
| Chromium | **15.8** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7439-92-1 | |
| Molybdenum | **18.1** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7439-98-7 | |
| Nickel | **8.7** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:23 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **37.8** | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:14 | 7440-42-8 | |
| Lithium | **144** | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:14 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:43 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 14:59 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 14:59 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 14:59 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:59 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 14:59 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-2** **Lab ID: 92282241003** Collected: 01/06/16 17:20 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 14:59 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 14:59 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 14:59 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 14:59 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 14:59 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 14:59 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 109 | % | 70-130 | 1 | | 01/11/16 14:59 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 106 | % | 70-130 | 1 | | 01/11/16 14:59 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 14:59 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2480** | mg/L | 250 | 1 | | 01/09/16 11:52 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1 DUP.** **Lab ID: 92282241004** Collected: 01/06/16 14:15 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **447** | mg/L | 9.0 | 9 | | 01/12/16 05:04 | 16887-00-6 | |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 01/11/16 16:32 | 16984-48-8 | |
| Sulfate | **11.0** | mg/L | 1.0 | 1 | | 01/11/16 16:32 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-38-2 | |
| Barium | **228** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-43-9 | |
| Calcium | **116000** | ug/L | 1000 | 10 | 01/08/16 18:00 | 01/12/16 13:34 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-28-0 | |
| Vanadium | **6.7** | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-62-2 | |
| Zinc | **13.9** | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:26 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | **9.6** | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:17 | 7440-42-8 | |
| Lithium | **30.7** | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:17 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:46 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 15:16 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 15:16 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 15:16 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:16 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 15:16 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1 DUP.** **Lab ID: 92282241004** Collected: 01/06/16 14:15 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 15:16 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 15:16 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:16 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 15:16 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:16 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 15:16 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 111 | % | 70-130 | 1 | | 01/11/16 15:16 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 109 | % | 70-130 | 1 | | 01/11/16 15:16 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/11/16 15:16 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **950** | mg/L | 250 | 1 | | 01/09/16 11:52 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: AMBIENT BLANK** **Lab ID: 92282241005** Collected: 01/06/16 17:00 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/11/16 16:55 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 16:55 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/11/16 16:55 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/12/16 13:46 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:39 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:38 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:38 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:48 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 15:33 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 15:33 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 15:33 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:33 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 15:33 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: AMBIENT BLANK** **Lab ID: 92282241005** Collected: 01/06/16 17:00 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 15:33 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 15:33 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:33 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 15:33 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:33 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 15:33 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 109 | % | 70-130 | 1 | | 01/11/16 15:33 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 108 | % | 70-130 | 1 | | 01/11/16 15:33 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 15:33 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/09/16 11:52 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: EQUIP. BLANK** **Lab ID: 92282241006** Collected: 01/06/16 17:30 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 01/11/16 17:17 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 01/11/16 17:17 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 01/11/16 17:17 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 01/08/16 18:00 | 01/12/16 13:50 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 01/08/16 18:00 | 01/11/16 17:42 | 7440-66-6 | |
| **6020A MET ICPMS** | Analytical Method: EPA 6020A Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 01/11/16 09:00 | 01/11/16 14:41 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 01/11/16 09:00 | 01/11/16 14:41 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 01/08/16 21:30 | 01/14/16 11:50 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 15:50 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 15:50 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 15:50 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:50 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 15:50 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: EQUIP. BLANK** **Lab ID: 92282241006** Collected: 01/06/16 17:30 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 15:50 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 15:50 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 15:50 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 15:50 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 15:50 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 15:50 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 108 | % | 70-130 | 1 | | 01/11/16 15:50 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 108 | % | 70-130 | 1 | | 01/11/16 15:50 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 01/11/16 15:50 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 01/09/16 11:52 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: TRIP BLANK** **Lab ID: 92282241007** Collected: 01/06/16 00:00 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 01/11/16 16:08 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 01/11/16 16:08 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 01/11/16 16:08 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 01/11/16 16:08 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 01/11/16 16:08 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 01/11/16 16:08 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 01/11/16 16:08 | 74-88-4 | |
| Methylene Chloride | **1.1** | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-09-2 | C9 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 01/11/16 16:08 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 01/11/16 16:08 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 01/11/16 16:08 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 01/11/16 16:08 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 109 | % | 70-130 | 1 | | 01/11/16 16:08 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: TRIP BLANK** **Lab ID: 92282241007** Collected: 01/06/16 00:00 Received: 01/07/16 08:43 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 109 | % | 70-130 | 1 | | 01/11/16 16:08 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 01/11/16 16:08 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: GWD/2797 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1644433 — Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 01/11/16 09:49 | |
| Fluoride | mg/L | ND | 0.10 | 01/11/16 09:49 | |
| Sulfate | mg/L | ND | 1.0 | 01/11/16 09:49 | |

LABORATORY CONTROL SAMPLE: 1644434

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 49.0 | 98 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.5 | 99 | 90-110 | |
| Sulfate | mg/L | 50 | 48.1 | 96 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1644435 1644436

| Parameter | Units | 92281799001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 6.7 | 50 | 50 | 57.2 | 58.2 | 101 | 103 | 90-110 | 2 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.4 | 2.5 | 96 | 97 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 9.4 | 50 | 50 | 59.9 | 60.6 | 101 | 102 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1644437 1644438

| Parameter | Units | 92282212001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 64.1 | 50 | 50 | 114 | 116 | 100 | 103 | 90-110 | 1 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.5 | 2.6 | 98 | 102 | 90-110 | 4 | 20 | |
| Sulfate | mg/L | 46.9 | 50 | 50 | 96.4 | 99.7 | 99 | 106 | 90-110 | 3 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: MERP/8850 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1643395 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 01/14/16 11:10 | |

LABORATORY CONTROL SAMPLE: 1643396

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.6 | 105 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643397 1643398

| Parameter | Units | 92281698007 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.4 | 2.4 | 92 | 93 | 75-125 | 1 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: MPRP/20439 Analysis Method: EPA 6010
QC Batch Method: EPA 3010A Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1643941 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Arsenic | ug/L | ND | 10.0 | 01/11/16 16:39 | |
| Barium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Beryllium | ug/L | ND | 1.0 | 01/11/16 16:39 | |
| Cadmium | ug/L | ND | 1.0 | 01/11/16 16:39 | |
| Calcium | ug/L | ND | 100 | 01/11/16 16:39 | |
| Chromium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Cobalt | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Copper | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Lead | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Molybdenum | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Nickel | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Selenium | ug/L | ND | 10.0 | 01/11/16 16:39 | |
| Silver | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Thallium | ug/L | ND | 5.4 | 01/11/16 16:39 | |
| Vanadium | ug/L | ND | 5.0 | 01/11/16 16:39 | |
| Zinc | ug/L | ND | 10.0 | 01/11/16 16:39 | |

LABORATORY CONTROL SAMPLE: 1643942

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 496 | 99 | 80-120 | |
| Arsenic | ug/L | 500 | 466 | 93 | 80-120 | |
| Barium | ug/L | 500 | 457 | 91 | 80-120 | |
| Beryllium | ug/L | 500 | 452 | 90 | 80-120 | |
| Cadmium | ug/L | 500 | 467 | 93 | 80-120 | |
| Calcium | ug/L | 5000 | 4760 | 95 | 80-120 | |
| Chromium | ug/L | 500 | 454 | 91 | 80-120 | |
| Cobalt | ug/L | 500 | 473 | 95 | 80-120 | |
| Copper | ug/L | 500 | 463 | 93 | 80-120 | |
| Lead | ug/L | 500 | 467 | 93 | 80-120 | |
| Molybdenum | ug/L | 500 | 507 | 101 | 80-120 | |
| Nickel | ug/L | 500 | 468 | 94 | 80-120 | |
| Selenium | ug/L | 500 | 467 | 93 | 80-120 | |
| Silver | ug/L | 250 | 236 | 94 | 80-120 | |
| Thallium | ug/L | 500 | 450 | 90 | 80-120 | |
| Vanadium | ug/L | 500 | 458 | 92 | 80-120 | |
| Zinc | ug/L | 500 | 467 | 93 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1643943 1643944

| Parameter | Units | 92282072001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 520 | 521 | 103 | 104 | 75-125 | 0 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 498 | 497 | 99 | 99 | 75-125 | 0 | 25 | |
| Barium | ug/L | 140 | 500 | 500 | 623 | 617 | 97 | 95 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 482 | 478 | 96 | 96 | 75-125 | 1 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 490 | 491 | 98 | 98 | 75-125 | 0 | 25 | |
| Calcium | ug/L | 35600 | 5000 | 5000 | 41500 | 40900 | 118 | 107 | 75-125 | 1 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 477 | 477 | 95 | 95 | 75-125 | 0 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 480 | 481 | 96 | 96 | 75-125 | 0 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 494 | 492 | 99 | 98 | 75-125 | 0 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 464 | 465 | 93 | 93 | 75-125 | 0 | 25 | |
| Molybdenum | ug/L | 5.4 | 500 | 500 | 539 | 545 | 107 | 108 | 75-125 | 1 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 476 | 477 | 95 | 95 | 75-125 | 0 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 490 | 491 | 98 | 98 | 75-125 | 0 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 250 | 250 | 100 | 100 | 75-125 | 0 | 25 | |
| Thallium | ug/L | 6.2 | 500 | 500 | 438 | 450 | 86 | 89 | 75-125 | 3 | 25 | |
| Vanadium | ug/L | ND | 500 | 500 | 492 | 493 | 98 | 99 | 75-125 | 0 | 25 | |
| Zinc | ug/L | 11.3 | 500 | 500 | 497 | 497 | 97 | 97 | 75-125 | 0 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: MPRP/60875 Analysis Method: EPA 6020A
QC Batch Method: EPA 3020 Analysis Description: 6020A Water UPD4
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 2172925 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 01/11/16 14:06 | |
| Lithium | ug/L | ND | 0.50 | 01/11/16 14:06 | |

LABORATORY CONTROL SAMPLE: 2172926

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 90.5 | 113 | 80-120 | |
| Lithium | ug/L | 80 | 91.0 | 114 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2172927 2172928

| Parameter | Units | 92282241001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 9.2 | 80 | 80 | 101 | 99.6 | 115 | 113 | 80-120 | 2 | 20 | |
| Lithium | ug/L | 39.6 | 80 | 80 | 131 | 131 | 114 | 114 | 80-120 | 0 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: MSV/35118 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006, 92282241007

METHOD BLANK: 1644486 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006, 92282241007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| 2-Hexanone | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| Acetone | ug/L | ND | 25.0 | 01/11/16 10:59 | |
| Acrylonitrile | ug/L | ND | 10.0 | 01/11/16 10:59 | |
| Benzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromochloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromoform | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Bromomethane | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Carbon disulfide | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chlorobenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloroethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloroform | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Chloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Dibromomethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Ethylbenzene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Iodomethane | ug/L | ND | 5.0 | 01/11/16 10:59 | |
| Methylene Chloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Styrene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Toluene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Trichloroethene | ug/L | ND | 1.0 | 01/11/16 10:59 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

METHOD BLANK: 1644486 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006, 92282241007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Vinyl acetate | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| Vinyl chloride | ug/L | ND | 1.0 | 01/11/16 10:59 | |
| Xylene (Total) | ug/L | ND | 2.0 | 01/11/16 10:59 | |
| 1,2-Dichloroethane-d4 (S) | % | 98 | 70-130 | 01/11/16 10:59 | |
| 4-Bromofluorobenzene (S) | % | 105 | 70-130 | 01/11/16 10:59 | |
| Toluene-d8 (S) | % | 100 | 70-130 | 01/11/16 10:59 | |

LABORATORY CONTROL SAMPLE: 1644487

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 50.1 | 100 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 49.4 | 99 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 51.9 | 104 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 48.7 | 97 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 49.5 | 99 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 49.0 | 98 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 50.9 | 102 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 49.5 | 99 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.9 | 90 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 45.4 | 91 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 50.7 | 101 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 97.0 | 97 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 102 | 102 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 99.0 | 99 | 72-135 | |
| Acetone | ug/L | 100 | 107 | 107 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 246 | 99 | 40-160 | |
| Benzene | ug/L | 50 | 48.9 | 98 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 50.6 | 101 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 50.0 | 100 | 78-124 | |
| Bromoform | ug/L | 50 | 45.0 | 90 | 71-128 | |
| Bromomethane | ug/L | 50 | 42.5 | 85 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 55.4 | 111 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 51.0 | 102 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 50.4 | 101 | 81-122 | |
| Chloroethane | ug/L | 50 | 42.7 | 85 | 39-148 | |
| Chloroform | ug/L | 50 | 48.6 | 97 | 73-127 | |
| Chloromethane | ug/L | 50 | 44.8 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 47.8 | 96 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.3 | 101 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 52.6 | 105 | 78-125 | |
| Dibromomethane | ug/L | 50 | 50.2 | 100 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 49.5 | 99 | 79-121 | |
| Iodomethane | ug/L | 100 | 76.3 | 76 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

LABORATORY CONTROL SAMPLE: 1644487

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 44.4 | 89 | 64-133 | |
| Styrene | ug/L | 50 | 51.1 | 102 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 51.5 | 103 | 78-122 | |
| Toluene | ug/L | 50 | 48.8 | 98 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 47.5 | 95 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 50.5 | 101 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 50.6 | 101 | 40-160 | |
| Trichloroethene | ug/L | 50 | 49.3 | 99 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 48.8 | 98 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 100 | 100 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 50.6 | 101 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 149 | 99 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 94 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 110 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1644488

| Parameter | Units | 92282072001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 24.6 | 123 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 21.4 | 107 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 23.0 | 115 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 23.0 | 115 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 21.9 | 110 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 21.3 | 106 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 22.1 | 111 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 44.1 | 110 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 46.0 | 115 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 46.9 | 117 | 70-130 | |
| Acetone | ug/L | ND | 40 | 50.1 | 125 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 112 | 112 | 70-130 | |
| Benzene | ug/L | ND | 20 | 21.6 | 108 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 22.3 | 111 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 20.1 | 101 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 25.8 | 129 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 22.2 | 111 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 20.8 | 104 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

MATRIX SPIKE SAMPLE: 1644488

| Parameter | Units | 92282072001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 22.7 | 113 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 22.7 | 114 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 26.5 | 66 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 22.5 | 113 | 70-130 | |
| Styrene | ug/L | ND | 20 | 21.9 | 109 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| Toluene | ug/L | ND | 20 | 21.4 | 107 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 22.5 | 112 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 22.4 | 112 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 24.4 | 122 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 40.1 | 100 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 108 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 108 | 70-130 | |
| Toluene-d8 (S) | % | | | | 98 | 70-130 | |

SAMPLE DUPLICATE: 1644489

| Parameter | Units | 92282072002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

SAMPLE DUPLICATE: 1644489

| Parameter | Units | 92282072002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 104 | 103 | 1 | | |
| 4-Bromofluorobenzene (S) | % | 106 | 109 | 3 | | |
| Toluene-d8 (S) | % | 99 | 101 | 1 | | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: WET/42388 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1644309 Matrix: Water
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 01/09/16 11:49 | |

LABORATORY CONTROL SAMPLE: 1644310

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 256 | 102 | 90-110 | |

SAMPLE DUPLICATE: 1644311

| Parameter | Units | 92282363003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 340 | 339 | 0 | 5 | |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-8** **Lab ID: 92282241001** Collected: 01/06/16 10:50 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.358 (0.577)**<br>**C:NA T:92%** | pCi/L | 01/26/16 19:02 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.864 ± 0.364 (0.582)**<br>**C:92% T:86%** | pCi/L | 01/26/16 12:24 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1** **Lab ID: 92282241002** Collected: 01/06/16 13:40 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.209 ± 0.361 (0.646)**<br>**C:NA T:92%** | pCi/L | 01/26/16 20:01 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.455 ± 0.314 (0.604)**<br>**C:94% T:83%** | pCi/L | 01/26/16 12:24 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-2** **Lab ID: 92282241003** Collected: 01/06/16 17:20 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.716 ± 0.532 (0.665)**<br>**C:NA T:89%** | pCi/L | 01/26/16 19:15 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.69 ± 0.536 (0.720)**<br>**C:92% T:78%** | pCi/L | 01/26/16 12:24 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: MW-1 DUP.** **Lab ID: 92282241004** Collected: 01/06/16 14:15 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0716 ± 0.327 (0.194)**<br>**C:NA T:90%** | pCi/L | 01/26/16 19:28 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.627 ± 0.323 (0.565)**<br>**C:92% T:87%** | pCi/L | 01/26/16 12:24 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: AMBIENT BLANK** **Lab ID: 92282241005** Collected: 01/06/16 17:00 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.435 (0.919)**<br>**C:NA T:94%** | pCi/L | 01/26/16 19:28 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.119 ± 0.306 (0.682)**<br>**C:90% T:81%** | pCi/L | 01/26/16 16:14 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

**Sample: EQUIP. BLANK** **Lab ID: 92282241006** Collected: 01/06/16 17:30 Received: 01/07/16 08:43 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.545 ± 0.409 (0.211)**<br>**C:NA T:86%** | pCi/L | 01/26/16 19:40 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.100 ± 0.285 (0.640)**<br>**C:91% T:84%** | pCi/L | 01/26/16 16:14 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: RADC/27660 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1013930 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.0721 ± 0.329 (0.670) C:NA T:92% | pCi/L | 01/26/16 18:26 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

QC Batch: RADC/27621 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92282241001, 92282241002, 92282241003, 92282241004, 92282241005, 92282241006

METHOD BLANK: 1012925 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.749 ± 0.351 (0.590) C:89% T:85% | pCi/L | 01/26/16 12:25 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALIFIERS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## WORKORDER QUALIFIERS

WO: 92282241

[1] The analysis for Lithium and Boron was performed per EPA 6020 B criteria to meet North Carolina method requirements.

## ANALYTE QUALIFIERS

C9 Common Laboratory Contaminant.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92282241001** | **MW-8** | EPA 300.0 | GWD/2797 | | |
| **92282241002** | **MW-1** | EPA 300.0 | GWD/2797 | | |
| **92282241003** | **MW-2** | EPA 300.0 | GWD/2797 | | |
| **92282241004** | **MW-1 DUP.** | EPA 300.0 | GWD/2797 | | |
| **92282241005** | **AMBIENT BLANK** | EPA 300.0 | GWD/2797 | | |
| **92282241006** | **EQUIP. BLANK** | EPA 300.0 | GWD/2797 | | |
| **92282241001** | **MW-8** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241002** | **MW-1** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241003** | **MW-2** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241004** | **MW-1 DUP.** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241005** | **AMBIENT BLANK** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241006** | **EQUIP. BLANK** | EPA 3010A | MPRP/20439 | EPA 6010 | ICP/18443 |
| **92282241001** | **MW-8** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241002** | **MW-1** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241003** | **MW-2** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241004** | **MW-1 DUP.** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241005** | **AMBIENT BLANK** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241006** | **EQUIP. BLANK** | EPA 3020 | MPRP/60875 | EPA 6020A | ICPM/28104 |
| **92282241001** | **MW-8** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241002** | **MW-1** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241003** | **MW-2** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241004** | **MW-1 DUP.** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241005** | **AMBIENT BLANK** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241006** | **EQUIP. BLANK** | EPA 7470 | MERP/8850 | EPA 7470 | MERC/8499 |
| **92282241001** | **MW-8** | EPA 8260 | MSV/35118 | | |
| **92282241002** | **MW-1** | EPA 8260 | MSV/35118 | | |
| **92282241003** | **MW-2** | EPA 8260 | MSV/35118 | | |
| **92282241004** | **MW-1 DUP.** | EPA 8260 | MSV/35118 | | |
| **92282241005** | **AMBIENT BLANK** | EPA 8260 | MSV/35118 | | |
| **92282241006** | **EQUIP. BLANK** | EPA 8260 | MSV/35118 | | |
| **92282241007** | **TRIP BLANK** | EPA 8260 | MSV/35118 | | |
| **92282241001** | **MW-8** | EPA 903.1 | RADC/27660 | | |
| **92282241002** | **MW-1** | EPA 903.1 | RADC/27660 | | |
| **92282241003** | **MW-2** | EPA 903.1 | RADC/27660 | | |
| **92282241004** | **MW-1 DUP.** | EPA 903.1 | RADC/27660 | | |
| **92282241005** | **AMBIENT BLANK** | EPA 903.1 | RADC/27660 | | |
| **92282241006** | **EQUIP. BLANK** | EPA 903.1 | RADC/27660 | | |
| **92282241001** | **MW-8** | EPA 904.0 | RADC/27621 | | |
| **92282241002** | **MW-1** | EPA 904.0 | RADC/27621 | | |
| **92282241003** | **MW-2** | EPA 904.0 | RADC/27621 | | |
| **92282241004** | **MW-1 DUP.** | EPA 904.0 | RADC/27621 | | |
| **92282241005** | **AMBIENT BLANK** | EPA 904.0 | RADC/27621 | | |
| **92282241006** | **EQUIP. BLANK** | EPA 904.0 | RADC/27621 | | |
| **92282241001** | **MW-8** | SM 2540C | WET/42388 | | |
| **92282241002** | **MW-1** | SM 2540C | WET/42388 | | |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92282241

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92282241003** | **MW-2** | SM 2540C | WET/42388 | | |
| **92282241004** | **MW-1 DUP.** | SM 2540C | WET/42388 | | |
| **92282241005** | **AMBIENT BLANK** | SM 2540C | WET/42388 | | |
| **92282241006** | **EQUIP. BLANK** | SM 2540C | WET/42388 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HOR

**Project #:** WO#: 92282241

92282241

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

**Custody Seal on Cooler/Box Present?** ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

**Packing Material:** ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:

**Thermometer Used:** ☑ T1505

**Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 3.1

**Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C **Date and Initials of Person Examining Contents:** 1/7

**USDA Regulated Soil** ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐ Yes | ☑ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT | ☑ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐ Yes | ☐ No | ☑ N/A | |
| Samples checked for dechlorization | ☑ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☐ N/A | 16. HCL TB NO ON COC |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION**

**Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager SCURF Review:** SR **Date:** 1-7-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of 2042729

**Section A** Required Client Information:

| | |
|---|---|
| Company: | HDR |
| Address: | |
| | |
| Email To: | |
| Phone: | Fax: |
| Requested Due Date/TAT: | |

**Section B** Required Project Information:

| | |
|---|---|
| Report To: | |
| Copy To: | |
| | |
| Purchase Order No.: | |
| Project Name: | Church - Brickhaven |
| Project Number: | |

**Section C** Invoice Information:

| | |
|---|---|
| Attention: | |
| Company Name: | |
| Address: | |
| Pace Quote Reference: | |
| Pace Project Manager: | |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

**SAMPLE ID** (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED Composite Start DATE | COLLECTED Composite Start TIME | COLLECTED Composite End/Grab DATE | COLLECTED Composite End/Grab TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | Metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-8 | | G | | | 01/06/16 | 1050 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | MW-1 | | | | | | 1340 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | MW-2 | | | | | | 1720 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 003 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | MW-1 Dup. | | G | | | 01/06/16 | 1415 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Ambient Blank | | G | | | 01/06/16 | 1700 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 8 | Equip. Blank | | | | | | 1730 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 006 |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | TB 007 |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 01/06/16 | 1350 | Stan Lee PACE | 1-7-15 | 0843 | | | | |
| | S Tedenbach | 1-7-15 | 1255 | Omar Pace WVL | 1-7-15 | 1255 | 31 | Y | N | Y |
| | | | | | | | | | | |
| | | | | | | | | | | |

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: Clint Sorrell

DATE Signed (MM/DD/YY): 01/06/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 09, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 17, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92286895001** | **BG-1** | Water | 02/16/16 09:45 | 02/17/16 15:05 |
| **92286895002** | **MW-5** | Water | 02/16/16 11:00 | 02/17/16 15:05 |
| **92286895003** | **LEACHATE-1** | Water | 02/16/16 10:50 | 02/17/16 15:05 |
| **92286895004** | **MW-3** | Water | 02/16/16 12:45 | 02/17/16 15:05 |
| **92286895005** | **MW-4** | Water | 02/16/16 16:35 | 02/17/16 15:05 |
| **92286895006** | **SW-1** | Water | 02/16/16 16:50 | 02/17/16 15:05 |
| **92286895007** | **AMBIENT BLANK** | Water | 02/16/16 13:45 | 02/17/16 15:05 |
| **92286895008** | **EQ. BLANK** | Water | 02/16/16 17:00 | 02/17/16 15:05 |
| **92286895009** | **TRIP BLANK** | Water | 02/16/16 07:30 | 02/17/16 15:05 |



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# SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92286895001** | **BG-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895002** | **MW-5** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895003** | **LEACHATE-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895004** | **MW-3** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895005** | **MW-4** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895006** | **SW-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895007** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895008** | **EQ. BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | GAW | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MDW | 1 | PASI-A |
| **92286895009** | **TRIP BLANK** | EPA 8260 | GAW | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92286895001** | **BG-1** | | | | | |
| EPA 300.0 | Chloride | 277 | mg/L | 6.0 | 02/22/16 22:32 | M6 |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 02/22/16 13:24 | |
| EPA 300.0 | Sulfate | 18.6 | mg/L | 1.0 | 02/22/16 13:24 | |
| EPA 6010 | Barium | 354 | ug/L | 5.0 | 02/19/16 22:43 | |
| EPA 6010 | Calcium | 29500 | ug/L | 100 | 02/23/16 16:52 | M1 |
| EPA 6010 | Molybdenum | 6.8 | ug/L | 5.0 | 02/19/16 22:43 | |
| EPA 6010 | Thallium | 13.7 | ug/L | 5.4 | 02/19/16 22:43 | |
| EPA 6010 | Vanadium | 5.1 | ug/L | 5.0 | 02/23/16 16:52 | |
| EPA 6020B | Boron | 5.5 | ug/L | 5.0 | 02/23/16 08:21 | |
| EPA 6020B | Lithium | 17.1 | ug/L | 0.50 | 02/23/16 08:21 | |
| EPA 903.1 | Radium-226 | 0.553 ± 0.609 (0.974) C:NA T:95% | pCi/L | | 03/02/16 18:32 | 1g |
| EPA 904.0 | Radium-228 | 0.256 ± 0.331 (0.705) C:83% T:86% | pCi/L | | 03/04/16 11:33 | |
| SM 2540C | Total Dissolved Solids | 650 | mg/L | 50.0 | 02/18/16 11:13 | |
| **92286895002** | **MW-5** | | | | | |
| EPA 300.0 | Chloride | 21.3 | mg/L | 1.0 | 02/22/16 14:28 | |
| EPA 300.0 | Fluoride | 0.55 | mg/L | 0.10 | 02/22/16 14:28 | |
| EPA 300.0 | Sulfate | 3.6 | mg/L | 1.0 | 02/22/16 14:28 | |
| EPA 6010 | Barium | 129 | ug/L | 5.0 | 02/19/16 22:52 | |
| EPA 6010 | Calcium | 16900 | ug/L | 100 | 02/23/16 17:13 | |
| EPA 6010 | Thallium | 14.8 | ug/L | 5.4 | 02/19/16 22:52 | |
| EPA 6020B | Boron | 10.2 | ug/L | 5.0 | 02/23/16 08:34 | |
| EPA 6020B | Lithium | 6.3 | ug/L | 0.50 | 02/23/16 08:34 | |
| EPA 903.1 | Radium-226 | -0.142 ± 0.441 (1.00) C:NA T:94% | pCi/L | | 03/02/16 18:44 | 1g |
| EPA 904.0 | Radium-228 | 0.154 ± 0.297 (0.653) C:80% T:94% | pCi/L | | 03/04/16 15:22 | |
| SM 2540C | Total Dissolved Solids | 263 | mg/L | 25.0 | 02/18/16 11:13 | |
| **92286895003** | **LEACHATE-1** | | | | | |
| EPA 300.0 | Chloride | 7.1 | mg/L | 1.0 | 02/22/16 14:49 | |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 02/22/16 14:49 | |
| EPA 300.0 | Sulfate | 125 | mg/L | 2.0 | 02/22/16 23:53 | |
| EPA 6010 | Antimony | 13.5 | ug/L | 5.0 | 02/19/16 22:56 | |
| EPA 6010 | Arsenic | 25.6 | ug/L | 10.0 | 02/19/16 22:56 | |
| EPA 6010 | Barium | 205 | ug/L | 5.0 | 02/19/16 22:56 | |
| EPA 6010 | Calcium | 65000 | ug/L | 100 | 02/23/16 17:16 | |
| EPA 6010 | Chromium | 66.4 | ug/L | 5.0 | 02/19/16 22:56 | |
| EPA 6010 | Molybdenum | 110 | ug/L | 5.0 | 02/23/16 17:16 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92286895003** | **LEACHATE-1** | | | | | |
| EPA 6010 | Selenium | 388 | ug/L | 10.0 | 02/19/16 22:56 | |
| EPA 6010 | Vanadium | 58.6 | ug/L | 5.0 | 02/23/16 17:16 | |
| EPA 6010 | Zinc | 53.6 | ug/L | 10.0 | 02/19/16 22:56 | |
| EPA 6020B | Boron | 329 | ug/L | 25.0 | 02/23/16 09:49 | |
| EPA 6020B | Lithium | 21.7 | ug/L | 0.50 | 02/23/16 08:37 | |
| EPA 903.1 | Radium-226 | 0.166 ± 0.400 (0.772) C:NA T:82% | pCi/L | | 03/02/16 19:08 | 1g |
| EPA 904.0 | Radium-228 | 0.372 ± 0.362 (0.745) C:83% T:78% | pCi/L | | 03/04/16 15:22 | |
| SM 2540C | Total Dissolved Solids | 315 | mg/L | 25.0 | 02/18/16 11:14 | |
| **92286895004** | **MW-3** | | | | | |
| EPA 300.0 | Chloride | 1280 | mg/L | 25.0 | 02/23/16 00:21 | |
| EPA 300.0 | Fluoride | 0.21 | mg/L | 0.10 | 02/22/16 15:10 | |
| EPA 300.0 | Sulfate | 9.1 | mg/L | 1.0 | 02/22/16 15:10 | |
| EPA 6010 | Antimony | 10.8 | ug/L | 5.0 | 02/19/16 22:59 | |
| EPA 6010 | Barium | 855 | ug/L | 5.0 | 02/19/16 22:59 | |
| EPA 6010 | Calcium | 174000 | ug/L | 1000 | 02/22/16 17:44 | |
| EPA 6010 | Molybdenum | 13.8 | ug/L | 5.0 | 02/23/16 17:20 | |
| EPA 6020B | Boron | 35.8 | ug/L | 5.0 | 02/23/16 08:39 | |
| EPA 6020B | Lithium | 75.5 | ug/L | 0.50 | 02/23/16 08:39 | |
| EPA 903.1 | Radium-226 | 1.18 ± 0.783 (1.00) C:NA T:91% | pCi/L | | 03/08/16 20:15 | |
| EPA 904.0 | Radium-228 | 1.78 ± 0.527 (0.626) C:83% T:85% | pCi/L | | 03/04/16 15:22 | |
| SM 2540C | Total Dissolved Solids | 2270 | mg/L | 250 | 02/18/16 11:14 | |
| **92286895005** | **MW-4** | | | | | |
| EPA 300.0 | Chloride | 188 | mg/L | 5.0 | 02/23/16 00:48 | |
| EPA 300.0 | Fluoride | 0.36 | mg/L | 0.10 | 02/22/16 15:31 | |
| EPA 300.0 | Sulfate | 5.6 | mg/L | 1.0 | 02/22/16 15:31 | |
| EPA 6010 | Antimony | 5.0 | ug/L | 5.0 | 02/19/16 23:02 | |
| EPA 6010 | Barium | 157 | ug/L | 5.0 | 02/19/16 23:02 | |
| EPA 6010 | Calcium | 35200 | ug/L | 100 | 02/23/16 17:23 | |
| EPA 6020B | Boron | 5.7 | ug/L | 5.0 | 02/23/16 08:47 | |
| EPA 6020B | Lithium | 22.8 | ug/L | 0.50 | 02/23/16 08:47 | |
| EPA 903.1 | Radium-226 | 0.0693 ± 0.316 (0.510) C:NA T:100% | pCi/L | | 03/02/16 19:22 | 1g |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92286895005** | **MW-4** | | | | | |
| EPA 904.0 | Radium-228 | 0.171 ± 0.315 (0.690) C:83% T:88% | pCi/L | | 03/04/16 15:22 | |
| SM 2540C | Total Dissolved Solids | 800 | mg/L | 50.0 | 02/18/16 11:15 | |
| **92286895006** | **SW-1** | | | | | |
| EPA 300.0 | Chloride | 5.5 | mg/L | 1.0 | 02/22/16 15:52 | |
| EPA 300.0 | Fluoride | 0.12 | mg/L | 0.10 | 02/22/16 15:52 | |
| EPA 300.0 | Sulfate | 5.0 | mg/L | 1.0 | 02/22/16 15:52 | |
| EPA 6010 | Barium | 438 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Beryllium | 2.1 | ug/L | 1.0 | 02/19/16 23:05 | |
| EPA 6010 | Calcium | 6630 | ug/L | 100 | 02/23/16 17:26 | |
| EPA 6010 | Chromium | 20.4 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Cobalt | 13.1 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Copper | 24.5 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Lead | 37.3 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Nickel | 16.8 | ug/L | 5.0 | 02/19/16 23:05 | |
| EPA 6010 | Vanadium | 61.3 | ug/L | 5.0 | 02/23/16 17:26 | |
| EPA 6010 | Zinc | 91.1 | ug/L | 10.0 | 02/19/16 23:05 | |
| EPA 6020B | Boron | 8.6 | ug/L | 5.0 | 02/23/16 08:50 | |
| EPA 6020B | Lithium | 1.6 | ug/L | 0.50 | 02/23/16 08:50 | |
| EPA 903.1 | Radium-226 | 0.454 ± 0.557 (0.908) C:NA T:88% | pCi/L | | 03/02/16 19:22 | 1g |
| EPA 904.0 | Radium-228 | 1.24 ± 0.941 (1.85) C:77% T:70% | pCi/L | | 03/07/16 16:35 | |
| SM 2540C | Total Dissolved Solids | 614 | mg/L | 25.0 | 02/18/16 11:16 | |
| **92286895007** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | -0.274 ± 0.314 (0.822) C:NA T:95% | pCi/L | | 03/02/16 19:08 | 1g |
| EPA 904.0 | Radium-228 | 0.470 ± 0.332 (0.643) C:82% T:89% | pCi/L | | 03/04/16 15:23 | |
| **92286895008** | **EQ. BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.348 (0.561) C:NA T:92% | pCi/L | | 03/02/16 19:34 | 1g |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92286895008** | **EQ. BLANK** | | | | | |
| EPA 904.0 | Radium-228 | 0.405 ± 0.344 (0.692) C:80% T:88% | pCi/L | | 03/04/16 15:23 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: BG-1** **Lab ID: 92286895001** Collected: 02/16/16 09:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **277** | mg/L | 6.0 | 6 | | 02/22/16 22:32 | 16887-00-6 | M6 |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 02/22/16 13:24 | 16984-48-8 | |
| Sulfate | **18.6** | mg/L | 1.0 | 1 | | 02/22/16 13:24 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-38-2 | |
| Barium | **354** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-43-9 | |
| Calcium | **29500** | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 16:52 | 7440-70-2 | M1 |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7439-92-1 | |
| Molybdenum | **6.8** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-22-4 | |
| Thallium | **13.7** | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-28-0 | |
| Vanadium | **5.1** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 16:52 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:43 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **5.5** | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:21 | 7440-42-8 | |
| Lithium | **17.1** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:21 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 12:49 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 22:13 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 22:13 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 22:13 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 22:13 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 22:13 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: BG-1** **Lab ID: 92286895001** Collected: 02/16/16 09:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 22:13 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 22:13 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 22:13 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 22:13 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:13 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 22:13 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 22:13 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 107 | % | 70-130 | 1 | | 02/18/16 22:13 | 17060-07-0 | |
| Toluene-d8 (S) | 104 | % | 70-130 | 1 | | 02/18/16 22:13 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **650** | mg/L | 50.0 | 1 | | 02/18/16 11:13 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-5** **Lab ID: 92286895002** Collected: 02/16/16 11:00 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **21.3** | mg/L | 1.0 | 1 | | 02/22/16 14:28 | 16887-00-6 | |
| Fluoride | **0.55** | mg/L | 0.10 | 1 | | 02/22/16 14:28 | 16984-48-8 | |
| Sulfate | **3.6** | mg/L | 1.0 | 1 | | 02/22/16 14:28 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-38-2 | |
| Barium | **129** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-43-9 | |
| Calcium | **16900** | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:13 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:13 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-22-4 | |
| Thallium | **14.8** | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:13 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:52 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **10.2** | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:34 | 7440-42-8 | |
| Lithium | **6.3** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:34 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 12:56 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 22:47 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 22:47 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 22:47 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 22:47 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 22:47 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-5** **Lab ID: 92286895002** Collected: 02/16/16 11:00 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 22:47 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 22:47 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 22:47 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 22:47 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 22:47 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 22:47 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 22:47 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 106 | % | 70-130 | 1 | | 02/18/16 22:47 | 17060-07-0 | |
| Toluene-d8 (S) | 104 | % | 70-130 | 1 | | 02/18/16 22:47 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **263** | mg/L | 25.0 | 1 | | 02/18/16 11:13 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: LEACHATE-1** **Lab ID: 92286895003** Collected: 02/16/16 10:50 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **7.1** | mg/L | 1.0 | 1 | | 02/22/16 14:49 | 16887-00-6 | |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 02/22/16 14:49 | 16984-48-8 | |
| Sulfate | **125** | mg/L | 2.0 | 2 | | 02/22/16 23:53 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **13.5** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-36-0 | |
| Arsenic | **25.6** | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-38-2 | |
| Barium | **205** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-43-9 | |
| Calcium | **65000** | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:16 | 7440-70-2 | |
| Chromium | **66.4** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7439-92-1 | |
| Molybdenum | **110** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:16 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-02-0 | |
| Selenium | **388** | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-28-0 | |
| Vanadium | **58.6** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:16 | 7440-62-2 | |
| Zinc | **53.6** | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:56 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **329** | ug/L | 25.0 | 5 | 02/22/16 12:38 | 02/23/16 09:49 | 7440-42-8 | |
| Lithium | **21.7** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:37 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 12:58 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 23:04 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 23:04 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 23:04 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:04 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 23:04 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: LEACHATE-1** **Lab ID: 92286895003** Collected: 02/16/16 10:50 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 23:04 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 23:04 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:04 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 23:04 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:04 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 23:04 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 97 | % | 70-130 | 1 | | 02/18/16 23:04 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 107 | % | 70-130 | 1 | | 02/18/16 23:04 | 17060-07-0 | |
| Toluene-d8 (S) | 104 | % | 70-130 | 1 | | 02/18/16 23:04 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **315** | mg/L | 25.0 | 1 | | 02/18/16 11:14 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-3** **Lab ID: 92286895004** Collected: 02/16/16 12:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **1280** | mg/L | 25.0 | 25 | | 02/23/16 00:21 | 16887-00-6 | |
| Fluoride | **0.21** | mg/L | 0.10 | 1 | | 02/22/16 15:10 | 16984-48-8 | |
| Sulfate | **9.1** | mg/L | 1.0 | 1 | | 02/22/16 15:10 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **10.8** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-38-2 | |
| Barium | **855** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-43-9 | |
| Calcium | **174000** | ug/L | 1000 | 10 | 02/18/16 18:30 | 02/22/16 17:44 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7439-92-1 | |
| Molybdenum | **13.8** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:20 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:20 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 22:59 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **35.8** | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:39 | 7440-42-8 | |
| Lithium | **75.5** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:39 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 13:01 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 23:21 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 23:21 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 23:21 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:21 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 23:21 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-3** **Lab ID: 92286895004** Collected: 02/16/16 12:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 23:21 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 23:21 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:21 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 23:21 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:21 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 23:21 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 23:21 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 02/18/16 23:21 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/18/16 23:21 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2270** | mg/L | 250 | 1 | | 02/18/16 11:14 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-4** **Lab ID: 92286895005** Collected: 02/16/16 16:35 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **188** | mg/L | 5.0 | 5 | | 02/23/16 00:48 | 16887-00-6 | |
| Fluoride | **0.36** | mg/L | 0.10 | 1 | | 02/22/16 15:31 | 16984-48-8 | |
| Sulfate | **5.6** | mg/L | 1.0 | 1 | | 02/22/16 15:31 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **5.0** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-38-2 | |
| Barium | **157** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-43-9 | |
| Calcium | **35200** | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:23 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:23 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:23 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:02 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **5.7** | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:47 | 7440-42-8 | |
| Lithium | **22.8** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:47 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 13:03 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 23:38 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 23:38 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 23:38 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:38 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 23:38 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-4** **Lab ID: 92286895005** Collected: 02/16/16 16:35 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 23:38 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 23:38 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:38 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 23:38 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:38 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 23:38 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 23:38 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 106 | % | 70-130 | 1 | | 02/18/16 23:38 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/18/16 23:38 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **800** | mg/L | 50.0 | 1 | | 02/18/16 11:15 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: SW-1** **Lab ID: 92286895006** Collected: 02/16/16 16:50 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **5.5** | mg/L | 1.0 | 1 | | 02/22/16 15:52 | 16887-00-6 | |
| Fluoride | **0.12** | mg/L | 0.10 | 1 | | 02/22/16 15:52 | 16984-48-8 | |
| Sulfate | **5.0** | mg/L | 1.0 | 1 | | 02/22/16 15:52 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-38-2 | |
| Barium | **438** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-39-3 | |
| Beryllium | **2.1** | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-43-9 | |
| Calcium | **6630** | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:26 | 7440-70-2 | |
| Chromium | **20.4** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-47-3 | |
| Cobalt | **13.1** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-48-4 | |
| Copper | **24.5** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-50-8 | |
| Lead | **37.3** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:26 | 7439-98-7 | |
| Nickel | **16.8** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-28-0 | |
| Vanadium | **61.3** | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:26 | 7440-62-2 | |
| Zinc | **91.1** | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:05 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **8.6** | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:50 | 7440-42-8 | |
| Lithium | **1.6** | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:50 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 13:05 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 23:55 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 23:55 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 23:55 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:55 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 23:55 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: SW-1** **Lab ID: 92286895006** Collected: 02/16/16 16:50 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 23:55 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 23:55 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 23:55 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 23:55 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 23:55 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 23:55 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 97 | % | 70-130 | 1 | | 02/18/16 23:55 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 108 | % | 70-130 | 1 | | 02/18/16 23:55 | 17060-07-0 | |
| Toluene-d8 (S) | 104 | % | 70-130 | 1 | | 02/18/16 23:55 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **614** | mg/L | 25.0 | 1 | | 02/18/16 11:16 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: AMBIENT BLANK** **Lab ID: 92286895007** Collected: 02/16/16 13:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/22/16 16:13 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/22/16 16:13 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/22/16 16:13 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:29 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:18 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:52 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:52 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 13:08 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 18:50 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 18:50 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 18:50 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 18:50 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 18:50 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: AMBIENT BLANK** **Lab ID: 92286895007** Collected: 02/16/16 13:45 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 18:50 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 18:50 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 18:50 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 18:50 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:50 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 18:50 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 18:50 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 109 | % | 70-130 | 1 | | 02/18/16 18:50 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 02/18/16 18:50 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 02/18/16 11:17 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: EQ. BLANK** **Lab ID: 92286895008** Collected: 02/16/16 17:00 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/22/16 16:34 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/22/16 16:34 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/22/16 16:34 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/18/16 18:30 | 02/23/16 17:32 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/18/16 18:30 | 02/19/16 23:21 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 02/22/16 12:38 | 02/23/16 08:54 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/22/16 12:38 | 02/23/16 08:54 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/19/16 18:30 | 02/22/16 13:10 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 19:07 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 19:07 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 19:07 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 19:07 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 19:07 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: EQ. BLANK** **Lab ID: 92286895008** Collected: 02/16/16 17:00 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 19:07 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 19:07 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 19:07 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 19:07 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 19:07 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 19:07 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 19:07 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 108 | % | 70-130 | 1 | | 02/18/16 19:07 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 02/18/16 19:07 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 02/18/16 11:17 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: TRIP BLANK** **Lab ID: 92286895009** Collected: 02/16/16 07:30 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/18/16 18:33 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/18/16 18:33 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/18/16 18:33 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/18/16 18:33 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/18/16 18:33 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/18/16 18:33 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/18/16 18:33 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/18/16 18:33 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/18/16 18:33 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/18/16 18:33 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/18/16 18:33 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 96 | % | 70-130 | 1 | | 02/18/16 18:33 | 460-00-4 | |

## REPORT OF LABORATORY ANALYSIS

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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: TRIP BLANK** **Lab ID: 92286895009** Collected: 02/16/16 07:30 Received: 02/17/16 15:05 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 107 | % | 70-130 | 1 | | 02/18/16 18:33 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 02/18/16 18:33 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: GWD/2899 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 1670717 — Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 02/22/16 12:42 | |
| Fluoride | mg/L | ND | 0.10 | 02/22/16 12:42 | |
| Sulfate | mg/L | ND | 1.0 | 02/22/16 12:42 | |

LABORATORY CONTROL SAMPLE: 1670718

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 49.2 | 98 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.5 | 102 | 90-110 | |
| Sulfate | mg/L | 50 | 48.2 | 96 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670719 1670720

| Parameter | Units | 92286895001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 277 | 50 | 50 | 254 | 225 | -46 | -105 | 90-110 | 12 | 20 | M6 |
| Fluoride | mg/L | 0.13 | 2.5 | 2.5 | 2.4 | 2.5 | 91 | 94 | 90-110 | 3 | 20 | |
| Sulfate | mg/L | 18.6 | 50 | 50 | 67.0 | 67.6 | 97 | 98 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670721 1670722

| Parameter | Units | 92286721048 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 3.3 | 50 | 50 | 50.2 | 51.9 | 94 | 97 | 90-110 | 3 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.3 | 2.4 | 87 | 93 | 90-110 | 7 | 20 | M1 |
| Sulfate | mg/L | 2.0 | 50 | 50 | 47.6 | 49.6 | 91 | 95 | 90-110 | 4 | 20 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: MERP/8978 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 1669815 | Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 02/22/16 12:28 | |

LABORATORY CONTROL SAMPLE: 1669816

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.1 | 84 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669817 1669818

| Parameter | Units | 92286775001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.2 | 2.4 | 89 | 94 | 75-125 | 6 | 25 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: MPRP/20737 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 1669003 | Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Arsenic | ug/L | ND | 10.0 | 02/19/16 22:37 | |
| Barium | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Beryllium | ug/L | ND | 1.0 | 02/19/16 22:37 | |
| Cadmium | ug/L | ND | 1.0 | 02/19/16 22:37 | |
| Calcium | ug/L | ND | 100 | 02/23/16 16:46 | |
| Chromium | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Cobalt | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Copper | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Lead | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Molybdenum | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Nickel | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Selenium | ug/L | ND | 10.0 | 02/19/16 22:37 | |
| Silver | ug/L | ND | 5.0 | 02/19/16 22:37 | |
| Thallium | ug/L | ND | 5.4 | 02/19/16 22:37 | |
| Vanadium | ug/L | ND | 5.0 | 02/23/16 16:46 | |
| Zinc | ug/L | ND | 10.0 | 02/19/16 22:37 | |

LABORATORY CONTROL SAMPLE: 1669004

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 460 | 92 | 80-120 | |
| Arsenic | ug/L | 500 | 487 | 97 | 80-120 | |
| Barium | ug/L | 500 | 540 | 108 | 80-120 | |
| Beryllium | ug/L | 500 | 537 | 107 | 80-120 | |
| Cadmium | ug/L | 500 | 524 | 105 | 80-120 | |
| Calcium | ug/L | 5000 | 5320 | 106 | 80-120 | |
| Chromium | ug/L | 500 | 522 | 104 | 80-120 | |
| Cobalt | ug/L | 500 | 519 | 104 | 80-120 | |
| Copper | ug/L | 500 | 528 | 106 | 80-120 | |
| Lead | ug/L | 500 | 515 | 103 | 80-120 | |
| Molybdenum | ug/L | 500 | 451 | 90 | 80-120 | |
| Nickel | ug/L | 500 | 526 | 105 | 80-120 | |
| Selenium | ug/L | 500 | 514 | 103 | 80-120 | |
| Silver | ug/L | 250 | 226 | 91 | 80-120 | |
| Thallium | ug/L | 500 | 475 | 95 | 80-120 | |
| Vanadium | ug/L | 500 | 498 | 100 | 80-120 | |
| Zinc | ug/L | 500 | 511 | 102 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669005 1669006

| Parameter | Units | 92286895001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 452 | 465 | 90 | 93 | 75-125 | 3 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 490 | 504 | 98 | 101 | 75-125 | 3 | 25 | |
| Barium | ug/L | 354 | 500 | 500 | 873 | 884 | 104 | 106 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 521 | 539 | 104 | 108 | 75-125 | 3 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 509 | 526 | 102 | 105 | 75-125 | 3 | 25 | |
| Calcium | ug/L | 29500 | 5000 | 5000 | 35600 | 36400 | 121 | 139 | 75-125 | 2 | 25 | M1 |
| Chromium | ug/L | ND | 500 | 500 | 501 | 523 | 100 | 104 | 75-125 | 4 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 491 | 506 | 98 | 101 | 75-125 | 3 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 515 | 535 | 103 | 107 | 75-125 | 4 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 478 | 494 | 96 | 99 | 75-125 | 3 | 25 | |
| Molybdenum | ug/L | 6.8 | 500 | 500 | 445 | 477 | 88 | 94 | 75-125 | 7 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 494 | 512 | 99 | 102 | 75-125 | 4 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 503 | 519 | 100 | 104 | 75-125 | 3 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 220 | 228 | 88 | 91 | 75-125 | 4 | 25 | |
| Thallium | ug/L | 13.7 | 500 | 500 | 434 | 470 | 84 | 91 | 75-125 | 8 | 25 | |
| Vanadium | ug/L | 5.1 | 500 | 500 | 502 | 535 | 99 | 106 | 75-125 | 6 | 25 | |
| Zinc | ug/L | ND | 500 | 500 | 502 | 516 | 98 | 101 | 75-125 | 3 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: MPRP/61570 | Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 | Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 2196289 | Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 02/23/16 08:16 | |
| Lithium | ug/L | ND | 0.50 | 02/23/16 08:16 | |

LABORATORY CONTROL SAMPLE: 2196290

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 77.9 | 97 | 80-120 | |
| Lithium | ug/L | 80 | 80.6 | 101 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2196291 2196292

| Parameter | Units | 92286895001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 5.5 | 80 | 80 | 71.8 | 73.5 | 83 | 85 | 75-125 | 2 | 20 | |
| Lithium | ug/L | 17.1 | 80 | 80 | 91.4 | 92.6 | 93 | 94 | 75-125 | 1 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: MSV/35624 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008, 92286895009

METHOD BLANK: 1669161 Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008, 92286895009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 02/18/16 13:45 | |
| 2-Hexanone | ug/L | ND | 5.0 | 02/18/16 13:45 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 02/18/16 13:45 | |
| Acetone | ug/L | ND | 25.0 | 02/18/16 13:45 | |
| Acrylonitrile | ug/L | ND | 10.0 | 02/18/16 13:45 | |
| Benzene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Bromochloromethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Bromoform | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Bromomethane | ug/L | ND | 2.0 | 02/18/16 13:45 | |
| Carbon disulfide | ug/L | ND | 2.0 | 02/18/16 13:45 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Chlorobenzene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Chloroethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Chloroform | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Chloromethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Dibromomethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Ethylbenzene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Iodomethane | ug/L | ND | 5.0 | 02/18/16 13:45 | |
| Methylene Chloride | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Styrene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Toluene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 02/18/16 13:45 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

METHOD BLANK: 1669161 Matrix: Water

Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008, 92286895009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichloroethene | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Trichlorofluoromethane | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Vinyl acetate | ug/L | ND | 2.0 | 02/18/16 13:45 | |
| Vinyl chloride | ug/L | ND | 1.0 | 02/18/16 13:45 | |
| Xylene (Total) | ug/L | ND | 2.0 | 02/18/16 13:45 | |
| 1,2-Dichloroethane-d4 (S) | % | 108 | 70-130 | 02/18/16 13:45 | |
| 4-Bromofluorobenzene (S) | % | 96 | 70-130 | 02/18/16 13:45 | |
| Toluene-d8 (S) | % | 102 | 70-130 | 02/18/16 13:45 | |

LABORATORY CONTROL SAMPLE: 1669162

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 48.3 | 97 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 49.0 | 98 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 46.7 | 93 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 45.8 | 92 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 47.5 | 95 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 50.8 | 102 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 47.8 | 96 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 45.3 | 91 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 51.1 | 102 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 47.9 | 96 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 46.6 | 93 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 121 | 121 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 106 | 106 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 107 | 107 | 72-135 | |
| Acetone | ug/L | 100 | 123 | 123 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 264 | 105 | 40-160 | |
| Benzene | ug/L | 50 | 47.1 | 94 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 45.7 | 91 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 48.4 | 97 | 78-124 | |
| Bromoform | ug/L | 50 | 53.8 | 108 | 71-128 | |
| Bromomethane | ug/L | 50 | 57.6 | 115 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 52.1 | 104 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 49.3 | 99 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 46.4 | 93 | 81-122 | |
| Chloroethane | ug/L | 50 | 52.3 | 105 | 39-148 | |
| Chloroform | ug/L | 50 | 46.0 | 92 | 73-127 | |
| Chloromethane | ug/L | 50 | 60.5 | 121 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 47.5 | 95 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.0 | 100 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 52.1 | 104 | 78-125 | |
| Dibromomethane | ug/L | 50 | 44.9 | 90 | 82-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

LABORATORY CONTROL SAMPLE: 1669162

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Ethylbenzene | ug/L | 50 | 47.1 | 94 | 79-121 | |
| Iodomethane | ug/L | 100 | 132 | 132 | 39-154 | |
| Methylene Chloride | ug/L | 50 | 54.9 | 110 | 64-133 | |
| Styrene | ug/L | 50 | 47.2 | 94 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 46.7 | 93 | 78-122 | |
| Toluene | ug/L | 50 | 46.0 | 92 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 49.2 | 98 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 49.1 | 98 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 68.2 | 136 | 40-160 | |
| Trichloroethene | ug/L | 50 | 44.9 | 90 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 47.9 | 96 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 95.0 | 95 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 51.8 | 104 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 141 | 94 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 103 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 100 | 70-130 | |
| Toluene-d8 (S) | % | | | 102 | 70-130 | |

MATRIX SPIKE SAMPLE: 1669164

| Parameter | Units | 92286895002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 21.3 | 106 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 19.7 | 98 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.5 | 98 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 22.5 | 113 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 20.5 | 102 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 47.4 | 119 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 43.9 | 110 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 44.9 | 112 | 70-130 | |
| Acetone | ug/L | ND | 40 | 44.5 | 111 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 108 | 108 | 70-130 | |
| Benzene | ug/L | ND | 20 | 20.7 | 104 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 19.1 | 95 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 16.6 | 83 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 17.9 | 89 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 21.7 | 109 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 21.4 | 107 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 20.2 | 101 | 70-146 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

MATRIX SPIKE SAMPLE: 1669164

| Parameter | Units | 92286895002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloroethane | ug/L | ND | 20 | 22.9 | 115 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| Chloromethane | ug/L | ND | 20 | 24.8 | 124 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 20.5 | 103 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.7 | 98 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.5 | 97 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 18.9 | 95 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 20.9 | 105 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 43.9 | 110 | 70-130 | |
| Methylene Chloride | ug/L | ND | 20 | 22.1 | 110 | 70-130 | |
| Styrene | ug/L | ND | 20 | 19.9 | 100 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| Toluene | ug/L | ND | 20 | 20.7 | 103 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 21.7 | 108 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 18.9 | 95 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 20.1 | 100 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 22.4 | 112 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 34.3 | 86 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 23.1 | 116 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 103 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 99 | 70-130 | |
| Toluene-d8 (S) | % | | | | 101 | 70-130 | |

SAMPLE DUPLICATE: 1669163

| Parameter | Units | 92286895001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

SAMPLE DUPLICATE: 1669163

| Parameter | Units | 92286895001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 107 | 102 | 4 | | |
| 4-Bromofluorobenzene (S) | % | 96 | 97 | 0 | | |
| Toluene-d8 (S) | % | 104 | 101 | 3 | | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: WET/43121 — Analysis Method: SM 2540C
QC Batch Method: SM 2540C — Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 1668719 — Matrix: Water
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895006, 92286895007, 92286895008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 02/18/16 11:10 | |

LABORATORY CONTROL SAMPLE: 1668720

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 246 | 98 | 90-110 | |

SAMPLE DUPLICATE: 1668721

| Parameter | Units | 92286775001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 113 | 122 | 8 | 5 | D6 |

SAMPLE DUPLICATE: 1668722

| Parameter | Units | 92286895008 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | ND | | 5 | |

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## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: BG-1** **Lab ID: 92286895001** Collected: 02/16/16 09:45 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.553 ± 0.609 (0.974)**<br>**C:NA T:95%** | pCi/L | 03/02/16 18:32 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.256 ± 0.331 (0.705)**<br>**C:83% T:86%** | pCi/L | 03/04/16 11:33 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-5** **Lab ID: 92286895002** Collected: 02/16/16 11:00 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.142 ± 0.441 (1.00) C:NA T:94%** | pCi/L | 03/02/16 18:44 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.154 ± 0.297 (0.653) C:80% T:94%** | pCi/L | 03/04/16 15:22 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: LEACHATE-1** **Lab ID: 92286895003** Collected: 02/16/16 10:50 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.166 ± 0.400 (0.772)**<br>**C:NA T:82%** | pCi/L | 03/02/16 19:08 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.372 ± 0.362 (0.745)**<br>**C:83% T:78%** | pCi/L | 03/04/16 15:22 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-3** **Lab ID: 92286895004** Collected: 02/16/16 12:45 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **1.18 ± 0.783 (1.00) C:NA T:91%** | pCi/L | 03/08/16 20:15 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.78 ± 0.527 (0.626) C:83% T:85%** | pCi/L | 03/04/16 15:22 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: MW-4** **Lab ID: 92286895005** Collected: 02/16/16 16:35 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0693 ± 0.316 (0.510)**<br>**C:NA T:100%** | pCi/L | 03/02/16 19:22 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.171 ± 0.315 (0.690)**<br>**C:83% T:88%** | pCi/L | 03/04/16 15:22 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: SW-1** **Lab ID: 92286895006** Collected: 02/16/16 16:50 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.454 ± 0.557 (0.908)**<br>**C:NA T:88%** | pCi/L | 03/02/16 19:22 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **1.24 ± 0.941 (1.85)**<br>**C:77% T:70%** | pCi/L | 03/07/16 16:35 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: AMBIENT BLANK** **Lab ID: 92286895007** Collected: 02/16/16 13:45 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.274 ± 0.314 (0.822) C:NA T:95%** | pCi/L | 03/02/16 19:08 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.470 ± 0.332 (0.643) C:82% T:89%** | pCi/L | 03/04/16 15:23 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

**Sample: EQ. BLANK** **Lab ID: 92286895008** Collected: 02/16/16 17:00 Received: 02/17/16 15:05 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.348 (0.561)**<br>**C:NA T:92%** | pCi/L | 03/02/16 19:34 | 13982-63-3 | 1g |
| Radium-228 | EPA 904.0 | **0.405 ± 0.344 (0.692)**<br>**C:80% T:88%** | pCi/L | 03/04/16 15:23 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: RADC/28215 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92286895006

METHOD BLANK: 1032694 | Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.398 ± 0.305 (0.599) C:84% T:90% | pCi/L | 03/07/16 12:34 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: RADC/28155 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895004, 92286895005, 92286895007, 92286895008

METHOD BLANK: 1030493 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.279 ± 0.347 (0.736) C:84% T:84% | pCi/L | 03/04/16 11:32 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: RADC/28270 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92286895004

METHOD BLANK: 1034091 | Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.159 ± 0.382 (0.738) C:NA T:96% | pCi/L | 03/08/16 19:45 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

QC Batch: RADC/28150 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92286895001, 92286895002, 92286895003, 92286895005, 92286895006, 92286895007, 92286895008

METHOD BLANK: 1030487 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 2.10 ± 0.890 (0.807) C:NA T:100% | pCi/L | 03/02/16 18:56 | 1g |

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# QUALIFIERS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| 1g | Ra-226 was detected in the Method Blank at a level above the associated MDC. Samples with Ra-226 activity below the Routine RL of 1.0 pCi/L or the associated sample MDC are being reported without additional qualification. |
| D6 | The precision between the sample and sample duplicate exceeded laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92286895001** | **BG-1** | EPA 300.0 | GWD/2899 | | |
| **92286895002** | **MW-5** | EPA 300.0 | GWD/2899 | | |
| **92286895003** | **LEACHATE-1** | EPA 300.0 | GWD/2899 | | |
| **92286895004** | **MW-3** | EPA 300.0 | GWD/2899 | | |
| **92286895005** | **MW-4** | EPA 300.0 | GWD/2899 | | |
| **92286895006** | **SW-1** | EPA 300.0 | GWD/2899 | | |
| **92286895007** | **AMBIENT BLANK** | EPA 300.0 | GWD/2899 | | |
| **92286895008** | **EQ. BLANK** | EPA 300.0 | GWD/2899 | | |
| **92286895001** | **BG-1** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895002** | **MW-5** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895003** | **LEACHATE-1** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895004** | **MW-3** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895005** | **MW-4** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895006** | **SW-1** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895007** | **AMBIENT BLANK** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895008** | **EQ. BLANK** | EPA 3010A | MPRP/20737 | EPA 6010 | ICP/18690 |
| **92286895001** | **BG-1** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895002** | **MW-5** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895003** | **LEACHATE-1** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895004** | **MW-3** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895005** | **MW-4** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895006** | **SW-1** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895007** | **AMBIENT BLANK** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895008** | **EQ. BLANK** | EPA 3020 | MPRP/61570 | EPA 6020B | ICPM/28426 |
| **92286895001** | **BG-1** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895002** | **MW-5** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895003** | **LEACHATE-1** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895004** | **MW-3** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895005** | **MW-4** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895006** | **SW-1** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895007** | **AMBIENT BLANK** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895008** | **EQ. BLANK** | EPA 7470 | MERP/8978 | EPA 7470 | MERC/8625 |
| **92286895001** | **BG-1** | EPA 8260 | MSV/35624 | | |
| **92286895002** | **MW-5** | EPA 8260 | MSV/35624 | | |
| **92286895003** | **LEACHATE-1** | EPA 8260 | MSV/35624 | | |
| **92286895004** | **MW-3** | EPA 8260 | MSV/35624 | | |
| **92286895005** | **MW-4** | EPA 8260 | MSV/35624 | | |
| **92286895006** | **SW-1** | EPA 8260 | MSV/35624 | | |
| **92286895007** | **AMBIENT BLANK** | EPA 8260 | MSV/35624 | | |
| **92286895008** | **EQ. BLANK** | EPA 8260 | MSV/35624 | | |
| **92286895009** | **TRIP BLANK** | EPA 8260 | MSV/35624 | | |
| **92286895001** | **BG-1** | EPA 903.1 | RADC/28150 | | |
| **92286895002** | **MW-5** | EPA 903.1 | RADC/28150 | | |
| **92286895003** | **LEACHATE-1** | EPA 903.1 | RADC/28150 | | |
| **92286895004** | **MW-3** | EPA 903.1 | RADC/28270 | | |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92286895

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92286895005** | **MW-4** | EPA 903.1 | RADC/28150 | | |
| **92286895006** | **SW-1** | EPA 903.1 | RADC/28150 | | |
| **92286895007** | **AMBIENT BLANK** | EPA 903.1 | RADC/28150 | | |
| **92286895008** | **EQ. BLANK** | EPA 903.1 | RADC/28150 | | |
| **92286895001** | **BG-1** | EPA 904.0 | RADC/28155 | | |
| **92286895002** | **MW-5** | EPA 904.0 | RADC/28155 | | |
| **92286895003** | **LEACHATE-1** | EPA 904.0 | RADC/28155 | | |
| **92286895004** | **MW-3** | EPA 904.0 | RADC/28155 | | |
| **92286895005** | **MW-4** | EPA 904.0 | RADC/28155 | | |
| **92286895006** | **SW-1** | EPA 904.0 | RADC/28215 | | |
| **92286895007** | **AMBIENT BLANK** | EPA 904.0 | RADC/28155 | | |
| **92286895008** | **EQ. BLANK** | EPA 904.0 | RADC/28155 | | |
| **92286895001** | **BG-1** | SM 2540C | WET/43121 | | |
| **92286895002** | **MW-5** | SM 2540C | WET/43121 | | |
| **92286895003** | **LEACHATE-1** | SM 2540C | WET/43121 | | |
| **92286895004** | **MW-3** | SM 2540C | WET/43121 | | |
| **92286895005** | **MW-4** | SM 2540C | WET/43121 | | |
| **92286895006** | **SW-1** | SM 2540C | WET/43121 | | |
| **92286895007** | **AMBIENT BLANK** | SM 2540C | WET/43121 | | |
| **92286895008** | **EQ. BLANK** | SM 2540C | WET/43121 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Project #:** WO# : 92286895

92286895

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:_____

**Custody Seal on Cooler/Box Present?** ☐ Yes ☐ No **Seals Intact?** ☐ Yes ☐ No

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other:_____

**Thermometer Used:** ☐ T1505 **Type of Ice:** ☐ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 3.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C **Date and Initials of Person Examining Contents:** AO 2-17-16

**USDA Regulated Soil** ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☐ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☐ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☐ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☐ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☐ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐ Yes | ☐ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☐ No | ☐ N/A | 7. |
| Sufficient Volume? | ☐ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☐ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☐ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☐ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☐ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? | ☐ Yes | ☐ No | ☐ N/A | 12. |
| -Includes Date/Time/ID/Analysis Matrix: WL | | | | |
| All containers needing acid/base preservation have been checked? | ☐ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☐ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐ Yes | ☐ No | ☐ N/A | |
| Samples checked for dechlorization | ☐ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☐ No | ☐ N/A | 15. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☐ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased):_____ | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

**Project Manager SCURF Review:** _____ **Date:** 2-17-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers).

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1995507

**Section A** Required Client Information:

| | |
|---|---|
| Company: | HDR |
| Address: | |
| Email To: | |
| Phone: | Fax: |
| Requested Due Date/TAT: | |

**Section B** Required Project Information:

| | |
|---|---|
| Report To: | Same |
| Copy To: | |
| Purchase Order No.: | |
| Project Name: | Charah - Brickshaven |
| Project Number: | |

**Section C** Invoice Information:

| | |
|---|---|
| Attention: | |
| Company Name: | |
| Address: | |
| Pace Quote Reference: | |
| Pace Project Manager: | |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

**SAMPLE ID** (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED Composite Start DATE | COLLECTED Composite Start TIME | COLLECTED Composite End/Grab DATE | COLLECTED Composite End/Grab TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | Metals | TDS | Fluoride | Chloride/Sulfate | 9260 | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92286895 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BG-1 | | G | | | 02/16/16 | 0945 | | 11 | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 001 |
| 2 | MW-5 | | | | | | 1100 | | | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 002 |
| 3 | Leachate-1 | | | | | | 1050 | | | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 003 |
| 4 | MW-3 | | | | | | 1245 | | | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 004 |
| 5 | MW-4 | | | | | | 1635 | | | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 005 |
| 6 | SW-1 | | | | | | 1650 | | | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 006 |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Trip Blank | | G | | | 02/16/16 | 0730 | | 2 | | | | | | | | | | | | | | 2 | | 009 |
| 9 | Ambient Blank | | | | | | 1345 | | 11 | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 007 |
| 10 | Eq. Blank | | | | | | 1700 | | 11 | | | | | | | | | 3 | 2 | 1 | 1 | 1 | 3 | | 008 |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 02/16/16 | 1730 | [illegible] | 2/17/16 | 1030 | | | | |
| | [illegible] / Pace | 2/17 | 1505 | [illegible] | 2-17-16 | 1505 | 3.2 | ✓ | ✓ | ✓ |
| | | | | | | | | | | |
| | | | | | | | | | | |

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/16/16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 10, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 18, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92287054001** | **SW-2** | Water | 02/17/16 08:15 | 02/18/16 09:32 |
| **92287054002** | **MW-2** | Water | 02/17/16 11:10 | 02/18/16 09:32 |
| **92287054003** | **MW-1** | Water | 02/17/16 13:45 | 02/18/16 09:32 |
| **92287054004** | **MW-6** | Water | 02/17/16 17:55 | 02/18/16 09:32 |
| **92287054005** | **MW-1 DUP** | Water | 02/17/16 14:00 | 02/18/16 09:32 |
| **92287054006** | **AMBIENT BLANK** | Water | 02/17/16 16:00 | 02/18/16 09:32 |
| **92287054007** | **EQ BLANK** | Water | 02/17/16 18:00 | 02/18/16 09:32 |
| **92287054008** | **TRIP BLANK** | Water | 02/17/16 07:30 | 02/18/16 09:32 |



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## SAMPLE ANALYTE COUNT

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92287054001** | **SW-2** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054002** | **MW-2** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054003** | **MW-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054004** | **MW-6** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054005** | **MW-1 DUP** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054006** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054007** | **EQ BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | TT3 | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92287054008** | **TRIP BLANK** | EPA 8260 | CCL | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92287054001** | **SW-2** | | | | | |
| EPA 300.0 | Chloride | 5.4 | mg/L | 1.0 | 02/22/16 17:37 | |
| EPA 300.0 | Sulfate | 4.5 | mg/L | 1.0 | 02/22/16 17:37 | |
| EPA 6010 | Barium | 47.5 | ug/L | 5.0 | 02/23/16 18:44 | |
| EPA 6010 | Calcium | 5030 | ug/L | 100 | 02/23/16 18:44 | |
| EPA 6010 | Molybdenum | 6.3 | ug/L | 5.0 | 02/22/16 22:03 | |
| EPA 6010 | Thallium | 13.9 | ug/L | 5.4 | 02/22/16 22:03 | |
| EPA 6010 | Vanadium | 6.1 | ug/L | 5.0 | 02/22/16 22:03 | |
| EPA 6010 | Zinc | 16.2 | ug/L | 10.0 | 02/22/16 22:03 | |
| EPA 6020B | Boron | 14.7 | ug/L | 5.0 | 02/22/16 07:27 | |
| EPA 6020B | Lithium | 1.5 | ug/L | 0.50 | 02/22/16 07:27 | |
| EPA 903.1 | Radium-226 | -0.170 ± 0.472 (0.990) C:NA T:62% | pCi/L | | 03/04/16 13:15 | |
| EPA 904.0 | Radium-228 | -0.147 ± 0.399 (0.973) C:87% T:53% | pCi/L | | 03/09/16 15:39 | |
| SM 2540C | Total Dissolved Solids | 181 | mg/L | 25.0 | 02/19/16 18:17 | |
| **92287054002** | **MW-2** | | | | | |
| EPA 300.0 | Chloride | 1190 | mg/L | 25.0 | 02/23/16 09:13 | |
| EPA 300.0 | Fluoride | 0.22 | mg/L | 0.10 | 02/22/16 17:58 | |
| EPA 300.0 | Sulfate | 247 | mg/L | 5.0 | 02/23/16 03:01 | |
| EPA 6010 | Antimony | 10.7 | ug/L | 5.0 | 02/22/16 22:12 | |
| EPA 6010 | Barium | 318 | ug/L | 5.0 | 02/22/16 22:12 | |
| EPA 6010 | Calcium | 207000 | ug/L | 500 | 02/23/16 19:22 | |
| EPA 6010 | Chromium | 23.3 | ug/L | 5.0 | 02/22/16 22:12 | |
| EPA 6010 | Molybdenum | 19.1 | ug/L | 5.0 | 02/22/16 22:12 | |
| EPA 6010 | Nickel | 13.5 | ug/L | 5.0 | 02/22/16 22:12 | |
| EPA 6010 | Thallium | 10.3 | ug/L | 5.4 | 02/22/16 22:12 | |
| EPA 6010 | Zinc | 27.2 | ug/L | 10.0 | 02/22/16 22:12 | |
| EPA 6020B | Boron | 37.4 | ug/L | 5.0 | 02/22/16 07:40 | |
| EPA 6020B | Lithium | 88.4 | ug/L | 0.50 | 02/22/16 07:40 | |
| EPA 903.1 | Radium-226 | 1.22 ± 0.656 (0.237) C:NA T:91% | pCi/L | | 03/04/16 13:03 | |
| EPA 904.0 | Radium-228 | 1.15 ± 0.496 (0.809) C:81% T:76% | pCi/L | | 03/09/16 15:38 | |
| SM 2540C | Total Dissolved Solids | 2470 | mg/L | 250 | 02/19/16 18:17 | D6 |
| **92287054003** | **MW-1** | | | | | |
| EPA 300.0 | Chloride | 167 | mg/L | 3.0 | 02/23/16 03:28 | |
| EPA 300.0 | Fluoride | 0.16 | mg/L | 0.10 | 02/22/16 18:19 | |
| EPA 300.0 | Sulfate | 8.7 | mg/L | 1.0 | 02/22/16 18:19 | |
| EPA 6010 | Barium | 70.3 | ug/L | 5.0 | 02/22/16 22:15 | |



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Huntersville, NC 28078
(704)875-9092

## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92287054003** | **MW-1** | | | | | |
| EPA 6010 | Calcium | 57700 | ug/L | 100 | 02/23/16 18:57 | |
| EPA 6020B | Boron | 10 | ug/L | 5.0 | 02/22/16 07:43 | |
| EPA 6020B | Lithium | 19.2 | ug/L | 0.50 | 02/22/16 07:43 | |
| EPA 903.1 | Radium-226 | 0.276 ± 0.421 (0.249) C:NA T:92% | pCi/L | | 03/04/16 13:13 | |
| EPA 904.0 | Radium-228 | 0.470 ± 0.369 (0.733) C:80% T:87% | pCi/L | | 03/09/16 15:38 | |
| SM 2540C | Total Dissolved Solids | 593 | mg/L | 25.0 | 02/19/16 18:18 | |
| **92287054004** | **MW-6** | | | | | |
| EPA 300.0 | Chloride | 242 | mg/L | 5.0 | 02/23/16 03:56 | |
| EPA 300.0 | Fluoride | 0.34 | mg/L | 0.10 | 02/22/16 18:40 | |
| EPA 300.0 | Sulfate | 87.7 | mg/L | 1.0 | 02/22/16 18:40 | |
| EPA 6010 | Barium | 118 | ug/L | 5.0 | 02/22/16 22:27 | |
| EPA 6010 | Calcium | 39200 | ug/L | 100 | 02/23/16 19:00 | |
| EPA 6020B | Boron | 6.6 | ug/L | 5.0 | 02/22/16 07:45 | |
| EPA 6020B | Lithium | 37.1 | ug/L | 0.50 | 02/22/16 07:45 | |
| EPA 903.1 | Radium-226 | 0.0812 ± 0.421 (0.874) C:NA T:98% | pCi/L | | 03/04/16 13:30 | |
| EPA 904.0 | Radium-228 | 0.249 ± 0.328 (0.698) C:84% T:84% | pCi/L | | 03/09/16 15:38 | |
| SM 2540C | Total Dissolved Solids | 783 | mg/L | 25.0 | 02/19/16 18:18 | |
| **92287054005** | **MW-1 DUP** | | | | | |
| EPA 300.0 | Chloride | 208 | mg/L | 4.0 | 02/23/16 04:24 | |
| EPA 300.0 | Fluoride | 0.15 | mg/L | 0.10 | 02/22/16 19:01 | |
| EPA 300.0 | Sulfate | 9.3 | mg/L | 1.0 | 02/22/16 19:01 | |
| EPA 6010 | Barium | 89.3 | ug/L | 5.0 | 02/22/16 22:30 | |
| EPA 6010 | Calcium | 68000 | ug/L | 100 | 02/23/16 19:12 | |
| EPA 6020B | Boron | 9.2 | ug/L | 5.0 | 02/22/16 07:53 | |
| EPA 6020B | Lithium | 19.7 | ug/L | 0.50 | 02/22/16 07:53 | |
| EPA 903.1 | Radium-226 | 0.534 ± 0.608 (0.958) C:NA T:97% | pCi/L | | 03/04/16 13:26 | |
| EPA 904.0 | Radium-228 | -0.103 ± 0.303 (0.731) C:81% T:83% | pCi/L | | 03/09/16 15:38 | |
| SM 2540C | Total Dissolved Solids | 660 | mg/L | 25.0 | 02/19/16 18:18 | |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92287054006** | **AMBIENT BLANK** | | | | | |
| EPA 6020B | Boron | 19.0 | ug/L | 5.0 | 02/22/16 07:56 | |
| EPA 903.1 | Radium-226 | 0.0880 ± 0.402 (0.648) C:NA T:99% | pCi/L | | 03/04/16 12:50 | |
| EPA 904.0 | Radium-228 | 0.270 ± 0.425 (0.922) C:75% T:82% | pCi/L | | 03/09/16 15:39 | |
| SM 2540C | Total Dissolved Solids | 93.0 | mg/L | 25.0 | 02/19/16 18:19 | |
| **92287054007** | **EQ BLANK** | | | | | |
| EPA 6020B | Boron | 19.0 | ug/L | 5.0 | 02/22/16 07:58 | |
| EPA 903.1 | Radium-226 | 0.310 ± 0.557 (0.952) C:NA T:92% | pCi/L | | 03/04/16 13:24 | |
| EPA 904.0 | Radium-228 | 0.0215 ± 0.309 (0.716) C:79% T:84% | pCi/L | | 03/09/16 15:39 | |
| SM 2540C | Total Dissolved Solids | 72.0 | mg/L | 25.0 | 02/19/16 18:19 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: SW-2** **Lab ID: 92287054001** Collected: 02/17/16 08:15 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **5.4** | mg/L | 1.0 | 1 | | 02/22/16 17:37 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/22/16 17:37 | 16984-48-8 | |
| Sulfate | **4.5** | mg/L | 1.0 | 1 | | 02/22/16 17:37 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-38-2 | |
| Barium | **47.5** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 18:44 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-43-9 | |
| Calcium | **5030** | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 18:44 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7439-92-1 | |
| Molybdenum | **6.3** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-22-4 | |
| Thallium | **13.9** | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-28-0 | |
| Vanadium | **6.1** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-62-2 | |
| Zinc | **16.2** | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:03 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **14.7** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:27 | 7440-42-8 | |
| Lithium | **1.5** | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:27 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:24 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 17:35 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 17:35 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 17:35 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:35 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 17:35 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: SW-2** **Lab ID: 92287054001** Collected: 02/17/16 08:15 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 17:35 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 17:35 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:35 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 17:35 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:35 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 17:35 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 02/19/16 17:35 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 95 | % | 70-130 | 1 | | 02/19/16 17:35 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 02/19/16 17:35 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **181** | mg/L | 25.0 | 1 | | 02/19/16 18:17 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-2** **Lab ID: 92287054002** Collected: 02/17/16 11:10 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **1190** | mg/L | 25.0 | 25 | | 02/23/16 09:13 | 16887-00-6 | |
| Fluoride | **0.22** | mg/L | 0.10 | 1 | | 02/22/16 17:58 | 16984-48-8 | |
| Sulfate | **247** | mg/L | 5.0 | 5 | | 02/23/16 03:01 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **10.7** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-38-2 | |
| Barium | **318** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 18:53 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-43-9 | |
| Calcium | **207000** | ug/L | 500 | 5 | 02/19/16 17:30 | 02/23/16 19:22 | 7440-70-2 | |
| Chromium | **23.3** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7439-92-1 | |
| Molybdenum | **19.1** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7439-98-7 | |
| Nickel | **13.5** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-22-4 | |
| Thallium | **10.3** | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-62-2 | |
| Zinc | **27.2** | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:12 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **37.4** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:40 | 7440-42-8 | |
| Lithium | **88.4** | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:40 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:31 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 17:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 17:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 17:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 17:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-2** **Lab ID: 92287054002** Collected: 02/17/16 11:10 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 17:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 17:52 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 17:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 17:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | 1 | | 02/19/16 17:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 92 | % | 70-130 | 1 | | 02/19/16 17:52 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 17:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2470** | mg/L | 250 | 1 | | 02/19/16 18:17 | | D6 |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1** **Lab ID: 92287054003** Collected: 02/17/16 13:45 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **167** | mg/L | 3.0 | 3 | | 02/23/16 03:28 | 16887-00-6 | |
| Fluoride | **0.16** | mg/L | 0.10 | 1 | | 02/22/16 18:19 | 16984-48-8 | |
| Sulfate | **8.7** | mg/L | 1.0 | 1 | | 02/22/16 18:19 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-38-2 | |
| Barium | **70.3** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 18:57 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-43-9 | |
| Calcium | **57700** | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 18:57 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:15 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **10** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:43 | 7440-42-8 | |
| Lithium | **19.2** | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:43 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:34 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 18:08 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 18:08 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 18:08 | 74-83-9 | M1 |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:08 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 18:08 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 74-87-3 | M1 |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1** **Lab ID: 92287054003** Collected: 02/17/16 13:45 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 110-57-6 | M1 |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 18:08 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 18:08 | 74-88-4 | M1 |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:08 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 18:08 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:08 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 18:08 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 02/19/16 18:08 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 95 | % | 70-130 | 1 | | 02/19/16 18:08 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 18:08 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **593** | mg/L | 25.0 | 1 | | 02/19/16 18:18 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-6** **Lab ID: 92287054004** Collected: 02/17/16 17:55 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **242** | mg/L | 5.0 | 5 | | 02/23/16 03:56 | 16887-00-6 | |
| Fluoride | **0.34** | mg/L | 0.10 | 1 | | 02/22/16 18:40 | 16984-48-8 | |
| Sulfate | **87.7** | mg/L | 1.0 | 1 | | 02/22/16 18:40 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-38-2 | |
| Barium | **118** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 19:00 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-43-9 | |
| Calcium | **39200** | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 19:00 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:00 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:27 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **6.6** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:45 | 7440-42-8 | |
| Lithium | **37.1** | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:45 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:36 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 18:25 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 18:25 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 18:25 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:25 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 18:25 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-6** **Lab ID: 92287054004** Collected: 02/17/16 17:55 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 18:25 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 18:25 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:25 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 18:25 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:25 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 18:25 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 02/19/16 18:25 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 95 | % | 70-130 | 1 | | 02/19/16 18:25 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 18:25 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **783** | mg/L | 25.0 | 1 | | 02/19/16 18:18 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1 DUP** **Lab ID: 92287054005** Collected: 02/17/16 14:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **208** | mg/L | 4.0 | 4 | | 02/23/16 04:24 | 16887-00-6 | |
| Fluoride | **0.15** | mg/L | 0.10 | 1 | | 02/22/16 19:01 | 16984-48-8 | |
| Sulfate | **9.3** | mg/L | 1.0 | 1 | | 02/22/16 19:01 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-38-2 | |
| Barium | **89.3** | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 19:12 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-43-9 | |
| Calcium | **68000** | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 19:12 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:12 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:30 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **9.2** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:53 | 7440-42-8 | |
| Lithium | **19.7** | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:53 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:38 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 18:58 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 18:58 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 18:58 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:58 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 18:58 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1 DUP** **Lab ID: 92287054005** Collected: 02/17/16 14:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 18:58 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 18:58 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 18:58 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 18:58 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 18:58 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 18:58 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 02/19/16 18:58 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 91 | % | 70-130 | 1 | | 02/19/16 18:58 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 18:58 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **660** | mg/L | 25.0 | 1 | | 02/19/16 18:18 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: AMBIENT BLANK** **Lab ID: 92287054006** Collected: 02/17/16 16:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/22/16 19:22 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/22/16 19:22 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/22/16 19:22 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 19:15 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 19:15 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:15 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/22/16 22:34 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **19.0** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:56 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:56 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:41 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 16:45 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 16:45 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 16:45 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 16:45 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 16:45 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: AMBIENT BLANK** **Lab ID: 92287054006** Collected: 02/17/16 16:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 16:45 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 16:45 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 16:45 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 16:45 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 16:45 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 16:45 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 102 | % | 70-130 | 1 | | 02/19/16 16:45 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 94 | % | 70-130 | 1 | | 02/19/16 16:45 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 16:45 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **93.0** | mg/L | 25.0 | 1 | | 02/19/16 18:19 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: EQ BLANK** **Lab ID: 92287054007** Collected: 02/17/16 18:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/22/16 19:43 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/22/16 19:43 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/22/16 19:43 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/19/16 17:30 | 02/23/16 19:18 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **19.0** | ug/L | 5.0 | 1 | 02/21/16 20:32 | 02/22/16 07:58 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/21/16 20:32 | 02/22/16 07:58 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/22/16 16:20 | 02/24/16 14:43 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 17:02 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 17:02 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 17:02 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:02 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 17:02 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: EQ BLANK** **Lab ID: 92287054007** Collected: 02/17/16 18:00 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 17:02 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 17:02 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:02 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 17:02 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:02 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 17:02 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 102 | % | 70-130 | 1 | | 02/19/16 17:02 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 93 | % | 70-130 | 1 | | 02/19/16 17:02 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 02/19/16 17:02 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **72.0** | mg/L | 25.0 | 1 | | 02/19/16 18:19 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: TRIP BLANK** **Lab ID: 92287054008** Collected: 02/17/16 07:30 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/19/16 17:19 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/19/16 17:19 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/19/16 17:19 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:19 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/19/16 17:19 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/19/16 17:19 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/19/16 17:19 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/19/16 17:19 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/19/16 17:19 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/19/16 17:19 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/19/16 17:19 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 02/19/16 17:19 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: TRIP BLANK** **Lab ID: 92287054008** Collected: 02/17/16 07:30 Received: 02/18/16 09:32 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 95 | % | 70-130 | 1 | | 02/19/16 17:19 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/19/16 17:19 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: GWD/2899 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1670717 — Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 02/22/16 12:42 | |
| Fluoride | mg/L | ND | 0.10 | 02/22/16 12:42 | |
| Sulfate | mg/L | ND | 1.0 | 02/22/16 12:42 | |

LABORATORY CONTROL SAMPLE: 1670718

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 49.2 | 98 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.5 | 102 | 90-110 | |
| Sulfate | mg/L | 50 | 48.2 | 96 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670719 — 1670720

| Parameter | Units | 92286895001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 277 | 50 | 50 | 254 | 225 | -46 | -105 | 90-110 | 12 | 20 | M6 |
| Fluoride | mg/L | 0.13 | 2.5 | 2.5 | 2.4 | 2.5 | 91 | 94 | 90-110 | 3 | 20 | |
| Sulfate | mg/L | 18.6 | 50 | 50 | 67.0 | 67.6 | 97 | 98 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670721 — 1670722

| Parameter | Units | 92286721048 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 3.3 | 50 | 50 | 50.2 | 51.9 | 94 | 97 | 90-110 | 3 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.3 | 2.4 | 87 | 93 | 90-110 | 7 | 20 | M1 |
| Sulfate | mg/L | 2.0 | 50 | 50 | 47.6 | 49.6 | 91 | 95 | 90-110 | 4 | 20 | |

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## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: MERP/8979 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1669821 Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 02/24/16 14:03 | |

LABORATORY CONTROL SAMPLE: 1669822

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.6 | 104 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669823 1669825

| Parameter | Units | 92286924008 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.3 | 2.3 | 91 | 88 | 75-125 | 3 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: MPRP/20745 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1670077 | Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Arsenic | ug/L | ND | 10.0 | 02/22/16 21:57 | |
| Barium | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Beryllium | ug/L | ND | 1.0 | 02/23/16 18:38 | |
| Cadmium | ug/L | ND | 1.0 | 02/22/16 21:57 | |
| Calcium | ug/L | ND | 100 | 02/23/16 18:38 | |
| Chromium | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Cobalt | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Copper | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Lead | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Molybdenum | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Nickel | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Selenium | ug/L | ND | 10.0 | 02/22/16 21:57 | |
| Silver | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Thallium | ug/L | ND | 5.4 | 02/22/16 21:57 | |
| Vanadium | ug/L | ND | 5.0 | 02/22/16 21:57 | |
| Zinc | ug/L | ND | 10.0 | 02/22/16 21:57 | |

LABORATORY CONTROL SAMPLE: 1670078

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 443 | 89 | 80-120 | |
| Arsenic | ug/L | 500 | 486 | 97 | 80-120 | |
| Barium | ug/L | 500 | 469 | 94 | 80-120 | |
| Beryllium | ug/L | 500 | 522 | 104 | 80-120 | |
| Cadmium | ug/L | 500 | 497 | 99 | 80-120 | |
| Calcium | ug/L | 5000 | 5520 | 110 | 80-120 | |
| Chromium | ug/L | 500 | 469 | 94 | 80-120 | |
| Cobalt | ug/L | 500 | 492 | 98 | 80-120 | |
| Copper | ug/L | 500 | 483 | 97 | 80-120 | |
| Lead | ug/L | 500 | 489 | 98 | 80-120 | |
| Molybdenum | ug/L | 500 | 456 | 91 | 80-120 | |
| Nickel | ug/L | 500 | 491 | 98 | 80-120 | |
| Selenium | ug/L | 500 | 498 | 100 | 80-120 | |
| Silver | ug/L | 250 | 211 | 84 | 80-120 | |
| Thallium | ug/L | 500 | 490 | 98 | 80-120 | |
| Vanadium | ug/L | 500 | 474 | 95 | 80-120 | |
| Zinc | ug/L | 500 | 485 | 97 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670079 1670080

| Parameter | Units | 92287054001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 430 | 434 | 86 | 87 | 75-125 | 1 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 484 | 492 | 97 | 98 | 75-125 | 2 | 25 | |
| Barium | ug/L | 47.5 | 500 | 500 | 539 | 564 | 98 | 103 | 75-125 | 5 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 522 | 544 | 104 | 109 | 75-125 | 4 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 494 | 499 | 99 | 100 | 75-125 | 1 | 25 | |
| Calcium | ug/L | 5030 | 5000 | 5000 | 10300 | 10600 | 105 | 112 | 75-125 | 3 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 485 | 466 | 96 | 93 | 75-125 | 4 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 486 | 492 | 97 | 98 | 75-125 | 1 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 504 | 486 | 100 | 96 | 75-125 | 4 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 485 | 492 | 97 | 98 | 75-125 | 1 | 25 | |
| Molybdenum | ug/L | 6.3 | 500 | 500 | 453 | 466 | 89 | 92 | 75-125 | 3 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 485 | 490 | 97 | 98 | 75-125 | 1 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 491 | 496 | 97 | 98 | 75-125 | 1 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 218 | 210 | 87 | 84 | 75-125 | 3 | 25 | |
| Thallium | ug/L | 13.9 | 500 | 500 | 496 | 518 | 96 | 101 | 75-125 | 4 | 25 | |
| Vanadium | ug/L | 6.1 | 500 | 500 | 493 | 476 | 97 | 94 | 75-125 | 4 | 25 | |
| Zinc | ug/L | 16.2 | 500 | 500 | 491 | 498 | 95 | 96 | 75-125 | 1 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: MPRP/61566 | Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 | Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 2196051 | Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 02/22/16 07:22 | |
| Lithium | ug/L | ND | 0.50 | 02/22/16 07:22 | |

LABORATORY CONTROL SAMPLE: 2196052

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 77.8 | 97 | 80-120 | |
| Lithium | ug/L | 80 | 75.9 | 95 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2196053 2196054

| Parameter | Units | 92287054001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 14.7 | 80 | 80 | 90.1 | 91.0 | 94 | 95 | 75-125 | 1 | 20 | |
| Lithium | ug/L | 1.5 | 80 | 80 | 77.6 | 77.9 | 95 | 95 | 75-125 | 0 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: MSV/35644 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007, 92287054008

METHOD BLANK: 1670021 Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007, 92287054008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 02/19/16 16:29 | |
| 2-Hexanone | ug/L | ND | 5.0 | 02/19/16 16:29 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 02/19/16 16:29 | |
| Acetone | ug/L | ND | 25.0 | 02/19/16 16:29 | |
| Acrylonitrile | ug/L | ND | 10.0 | 02/19/16 16:29 | |
| Benzene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Bromochloromethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Bromoform | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Bromomethane | ug/L | ND | 2.0 | 02/19/16 16:29 | |
| Carbon disulfide | ug/L | ND | 2.0 | 02/19/16 16:29 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Chlorobenzene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Chloroethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Chloroform | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Chloromethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Dibromomethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Ethylbenzene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Iodomethane | ug/L | ND | 5.0 | 02/19/16 16:29 | |
| Methylene Chloride | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Styrene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Toluene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 02/19/16 16:29 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

METHOD BLANK: 1670021 Matrix: Water

Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007, 92287054008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichloroethene | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Trichlorofluoromethane | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Vinyl acetate | ug/L | ND | 2.0 | 02/19/16 16:29 | |
| Vinyl chloride | ug/L | ND | 1.0 | 02/19/16 16:29 | |
| Xylene (Total) | ug/L | ND | 2.0 | 02/19/16 16:29 | |
| 1,2-Dichloroethane-d4 (S) | % | 92 | 70-130 | 02/19/16 16:29 | |
| 4-Bromofluorobenzene (S) | % | 98 | 70-130 | 02/19/16 16:29 | |
| Toluene-d8 (S) | % | 102 | 70-130 | 02/19/16 16:29 | |

LABORATORY CONTROL SAMPLE: 1670022

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 49.3 | 99 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 47.1 | 94 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 47.7 | 95 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 48.0 | 96 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 45.3 | 91 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 48.9 | 98 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 49.1 | 98 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 47.3 | 95 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 42.5 | 85 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 47.4 | 95 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.7 | 97 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 94.4 | 94 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 99.0 | 99 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 98.3 | 98 | 72-135 | |
| Acetone | ug/L | 100 | 90.5 | 91 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 236 | 94 | 40-160 | |
| Benzene | ug/L | 50 | 47.2 | 94 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 49.8 | 100 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 48.4 | 97 | 78-124 | |
| Bromoform | ug/L | 50 | 50.6 | 101 | 71-128 | |
| Bromomethane | ug/L | 50 | 34.9 | 70 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 54.8 | 110 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 50.2 | 100 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 48.1 | 96 | 81-122 | |
| Chloroethane | ug/L | 50 | 39.9 | 80 | 39-148 | |
| Chloroform | ug/L | 50 | 46.3 | 93 | 73-127 | |
| Chloromethane | ug/L | 50 | 39.6 | 79 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 46.4 | 93 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.8 | 102 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.2 | 100 | 78-125 | |
| Dibromomethane | ug/L | 50 | 50.5 | 101 | 82-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

LABORATORY CONTROL SAMPLE: 1670022

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Ethylbenzene | ug/L | 50 | 47.4 | 95 | 79-121 | |
| Iodomethane | ug/L | 100 | 86.3 | 86 | 39-154 | |
| Methylene Chloride | ug/L | 50 | 49.0 | 98 | 64-133 | |
| Styrene | ug/L | 50 | 48.6 | 97 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 47.3 | 95 | 78-122 | |
| Toluene | ug/L | 50 | 47.5 | 95 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 47.7 | 95 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 50.6 | 101 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 49.1 | 98 | 40-160 | |
| Trichloroethene | ug/L | 50 | 48.1 | 96 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 46.7 | 93 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 89.7 | 90 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 48.8 | 98 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 139 | 93 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 92 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 104 | 70-130 | |
| Toluene-d8 (S) | % | | | 100 | 70-130 | |

MATRIX SPIKE SAMPLE: 1670023

| Parameter | Units | 92287054003 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 20.5 | 102 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 18.3 | 91 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 19.1 | 95 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 21.5 | 108 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 19.3 | 97 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 17.7 | 88 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 31.8 | 80 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 34.7 | 87 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 39.0 | 97 | 70-130 | |
| Acetone | ug/L | ND | 40 | 30.5 | 74 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 88.3 | 88 | 70-130 | |
| Benzene | ug/L | ND | 20 | 20.5 | 102 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 16.0 | 80 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 9.2 | 46 | 70-130 | M1 |
| Carbon disulfide | ug/L | ND | 20 | 23.1 | 116 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 21.9 | 110 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 20.1 | 101 | 70-146 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

MATRIX SPIKE SAMPLE: 1670023

| Parameter | Units | 92287054003 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.7 | 101 | 70-130 | |
| Chloromethane | ug/L | ND | 20 | 13.0 | 65 | 70-130 | M1 |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 19.9 | 100 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.0 | 95 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 16.1 | 40 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 17.8 | 89 | 70-130 | |
| Styrene | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| Toluene | ug/L | ND | 20 | 20.4 | 102 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 18.3 | 91 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 6.1 | 30 | 70-130 | M1 |
| Trichloroethene | ug/L | ND | 20 | 20.9 | 105 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 33.8 | 85 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 19.7 | 99 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 92 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | | 101 | 70-130 | |

SAMPLE DUPLICATE: 1670024

| Parameter | Units | 92287054004 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

SAMPLE DUPLICATE: 1670024

| Parameter | Units | 92287054004 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 95 | 95 | 0 | | |
| 4-Bromofluorobenzene (S) | % | 101 | 101 | 0 | | |
| Toluene-d8 (S) | % | 101 | 102 | 1 | | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: WET/43149 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1669981 | Matrix: Water
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 02/19/16 18:12 | |

LABORATORY CONTROL SAMPLE: 1669982

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 260 | 104 | 90-110 | |

SAMPLE DUPLICATE: 1669983

| Parameter | Units | 92287091001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 82.0 | 55.0 | 39 | 5 | D6 |

SAMPLE DUPLICATE: 1669984

| Parameter | Units | 92287054002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 2470 | 2920 | 17 | 5 | D6 |

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## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: SW-2** **Lab ID: 92287054001** Collected: 02/17/16 08:15 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.170 ± 0.472 (0.990) C:NA T:62%** | pCi/L | 03/04/16 13:15 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **-0.147 ± 0.399 (0.973) C:87% T:53%** | pCi/L | 03/09/16 15:39 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-2** **Lab ID: 92287054002** Collected: 02/17/16 11:10 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **1.22 ± 0.656 (0.237) C:NA T:91%** | pCi/L | 03/04/16 13:03 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.15 ± 0.496 (0.809) C:81% T:76%** | pCi/L | 03/09/16 15:38 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1** **Lab ID: 92287054003** Collected: 02/17/16 13:45 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.276 ± 0.421 (0.249)**<br>**C:NA T:92%** | pCi/L | 03/04/16 13:13 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.470 ± 0.369 (0.733)**<br>**C:80% T:87%** | pCi/L | 03/09/16 15:38 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-6** **Lab ID: 92287054004** Collected: 02/17/16 17:55 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0812 ± 0.421 (0.874)**<br>**C:NA T:98%** | pCi/L | 03/04/16 13:30 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.249 ± 0.328 (0.698)**<br>**C:84% T:84%** | pCi/L | 03/09/16 15:38 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: MW-1 DUP** **Lab ID: 92287054005** Collected: 02/17/16 14:00 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.534 ± 0.608 (0.958)**<br>**C:NA T:97%** | pCi/L | 03/04/16 13:26 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **-0.103 ± 0.303 (0.731)**<br>**C:81% T:83%** | pCi/L | 03/09/16 15:38 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: AMBIENT BLANK** **Lab ID: 92287054006** Collected: 02/17/16 16:00 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0880 ± 0.402 (0.648) C:NA T:99%** | pCi/L | 03/04/16 12:50 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.270 ± 0.425 (0.922) C:75% T:82%** | pCi/L | 03/09/16 15:39 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

**Sample: EQ BLANK** **Lab ID: 92287054007** Collected: 02/17/16 18:00 Received: 02/18/16 09:32 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.310 ± 0.557 (0.952) C:NA T:92%** | pCi/L | 03/04/16 13:24 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.0215 ± 0.309 (0.716) C:79% T:84%** | pCi/L | 03/09/16 15:39 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: RADC/28151 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1030488 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.000 ± 0.406 (0.241) C:NA T:96% | pCi/L | 03/04/16 13:03 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

QC Batch: RADC/28157 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92287054001, 92287054002, 92287054003, 92287054004, 92287054005, 92287054006, 92287054007

METHOD BLANK: 1030495 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.300 ± 0.279 (0.568) C:93% T:90% | pCi/L | 03/09/16 15:37 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALIFIERS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| D6 | The precision between the sample and sample duplicate exceeded laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92287054001** | **SW-2** | EPA 300.0 | GWD/2899 | | |
| **92287054002** | **MW-2** | EPA 300.0 | GWD/2899 | | |
| **92287054003** | **MW-1** | EPA 300.0 | GWD/2899 | | |
| **92287054004** | **MW-6** | EPA 300.0 | GWD/2899 | | |
| **92287054005** | **MW-1 DUP** | EPA 300.0 | GWD/2899 | | |
| **92287054006** | **AMBIENT BLANK** | EPA 300.0 | GWD/2899 | | |
| **92287054007** | **EQ BLANK** | EPA 300.0 | GWD/2899 | | |
| **92287054001** | **SW-2** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054002** | **MW-2** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054003** | **MW-1** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054004** | **MW-6** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054005** | **MW-1 DUP** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054006** | **AMBIENT BLANK** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054007** | **EQ BLANK** | EPA 3010A | MPRP/20745 | EPA 6010 | ICP/18698 |
| **92287054001** | **SW-2** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054002** | **MW-2** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054003** | **MW-1** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054004** | **MW-6** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054005** | **MW-1 DUP** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054006** | **AMBIENT BLANK** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054007** | **EQ BLANK** | EPA 3020 | MPRP/61566 | EPA 6020B | ICPM/28413 |
| **92287054001** | **SW-2** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054002** | **MW-2** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054003** | **MW-1** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054004** | **MW-6** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054005** | **MW-1 DUP** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054006** | **AMBIENT BLANK** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054007** | **EQ BLANK** | EPA 7470 | MERP/8979 | EPA 7470 | MERC/8631 |
| **92287054001** | **SW-2** | EPA 8260 | MSV/35644 | | |
| **92287054002** | **MW-2** | EPA 8260 | MSV/35644 | | |
| **92287054003** | **MW-1** | EPA 8260 | MSV/35644 | | |
| **92287054004** | **MW-6** | EPA 8260 | MSV/35644 | | |
| **92287054005** | **MW-1 DUP** | EPA 8260 | MSV/35644 | | |
| **92287054006** | **AMBIENT BLANK** | EPA 8260 | MSV/35644 | | |
| **92287054007** | **EQ BLANK** | EPA 8260 | MSV/35644 | | |
| **92287054008** | **TRIP BLANK** | EPA 8260 | MSV/35644 | | |
| **92287054001** | **SW-2** | EPA 903.1 | RADC/28151 | | |
| **92287054002** | **MW-2** | EPA 903.1 | RADC/28151 | | |
| **92287054003** | **MW-1** | EPA 903.1 | RADC/28151 | | |
| **92287054004** | **MW-6** | EPA 903.1 | RADC/28151 | | |
| **92287054005** | **MW-1 DUP** | EPA 903.1 | RADC/28151 | | |
| **92287054006** | **AMBIENT BLANK** | EPA 903.1 | RADC/28151 | | |
| **92287054007** | **EQ BLANK** | EPA 903.1 | RADC/28151 | | |
| **92287054001** | **SW-2** | EPA 904.0 | RADC/28157 | | |
| **92287054002** | **MW-2** | EPA 904.0 | RADC/28157 | | |
| **92287054003** | **MW-1** | EPA 904.0 | RADC/28157 | | |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92287054

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92287054004** | **MW-6** | EPA 904.0 | RADC/28157 | | |
| **92287054005** | **MW-1 DUP** | EPA 904.0 | RADC/28157 | | |
| **92287054006** | **AMBIENT BLANK** | EPA 904.0 | RADC/28157 | | |
| **92287054007** | **EQ BLANK** | EPA 904.0 | RADC/28157 | | |
| **92287054001** | **SW-2** | SM 2540C | WET/43149 | | |
| **92287054002** | **MW-2** | SM 2540C | WET/43149 | | |
| **92287054003** | **MW-1** | SM 2540C | WET/43149 | | |
| **92287054004** | **MW-6** | SM 2540C | WET/43149 | | |
| **92287054005** | **MW-1 DUP** | SM 2540C | WET/43149 | | |
| **92287054006** | **AMBIENT BLANK** | SM 2540C | WET/43149 | | |
| **92287054007** | **EQ BLANK** | SM 2540C | WET/43149 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Project #:** WO# : 92287054

92287054

**Courier:** ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☒Pace ☐Other:

**Custody Seal on Cooler/Box Present?** ☐Yes ☒No **Seals Intact?** ☐Yes ☒No

**Packing Material:** ☐Bubble Wrap ☒Bubble Bags ☐None ☐Other:

**Thermometer Used:** ☒T1505 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 2.1 C **Biological Tissue Frozen?** ☐Yes ☒No ☐N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C **Date and Initials of Person Examining Contents:** RP 2-18-16

**USDA Regulated Soil** ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☒No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☒Yes | ☐No | ☐N/A | 1. |
| Chain of Custody Filled Out? | ☒Yes | ☐No | ☐N/A | 2. |
| Chain of Custody Relinquished? | ☒Yes | ☐No | ☐N/A | 3. |
| Sampler Name and/or Signature on COC? | ☒Yes | ☐No | ☐N/A | 4. |
| Samples Arrived within Hold Time? | ☒Yes | ☐No | ☐N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐Yes | ☒No | ☐N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐Yes | ☒No | ☐N/A | 7. |
| Sufficient Volume? | ☒Yes | ☐No | ☐N/A | 8. |
| Correct Containers Used? | ☒Yes | ☐No | ☐N/A | 9. |
| -Pace Containers Used? | ☒Yes | ☐No | ☐N/A | |
| Containers Intact? | ☒Yes | ☐No | ☐N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐Yes | ☒No | ☐N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: Water | ☒Yes | ☐No | ☐N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☒Yes | ☐No | ☐N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☒Yes | ☐No | ☐N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐Yes | ☒No | ☐N/A | |
| Samples checked for dechlorization | ☐Yes | ☒No | ☐N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐Yes | ☒No | ☐N/A | 15. |
| Trip Blank Present? | ✓ ☒Yes | ☒No | ☐N/A | 16. RP 2-18-16 |
| Trip Blank Custody Seals Present? | ✓ ☒Yes | ☒No | ☐N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager SCURF Review:** Date: 2/18/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers).

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1995508

**Section A** Required Client Information:

Company: HDR
Address:
Email To:
Phone: Fax:
Requested Due Date/TAT:

**Section B** Required Project Information:

Report To: Same
Copy To:
Purchase Order No.:
Project Name: Charah - Brickhaven
Project Number:

**Section C** Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | Metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92287054 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SW-2 | | G | | | 02/17/16 | 0815 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 001 |
| 2 | MW-2 | | | | | | 1110 | | | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 002 |
| 3 | MW-1 | | | | | | 1345 | | | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 003 |
| 4 | MW-6 | | | | | | 1755 | | | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 004 |
| 5 | MW-1 Dup. | | G | | | 02/17/16 | 1400 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 005 |
| 6 | Trip Blank | | G | | | 02/17/16 | 0730 | | 2 | | | | | | | | | | | 2 | | | | | | 008 |
| 7 | Ambient Blank | | | | | | 1600 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 006 |
| 8 | EQ. Blank | | | | | | 1800 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 007 |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 02/17/16 | 1845 | Stan L PACE | 2-18-16 | 0932 | | | | |
| | Stan L PACE | 2-18-16 | 1331 | RP Pace HVL | 2-18-16 | 13:31 | 2-1 | Y | N | Y |
| | | | | | | | | | | |
| | | | | | | | | | | |

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: Clint Sorrell DATE Signed (MM/DD/YY): 02/17/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 16, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 19, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92287261001** | **MW-8** | Water | 02/18/16 11:10 | 02/19/16 15:00 |
| **92287261002** | **AMBIENT BLANK** | Water | 02/18/16 12:00 | 02/19/16 15:00 |
| **92287261003** | **EQ BLANK** | Water | 02/18/16 12:15 | 02/19/16 15:00 |
| **92287261004** | **MW-7** | Water | 02/18/16 08:45 | 02/19/16 15:00 |
| **92287261005** | **TRIP BLANK** | Water | 02/18/16 07:30 | 02/19/16 15:00 |



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# SAMPLE ANALYTE COUNT

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92287261001** | **MW-8** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | SAM | 1 | PASI-A |
| **92287261002** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | SAM | 1 | PASI-A |
| **92287261003** | **EQ BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | SAM | 1 | PASI-A |
| **92287261004** | **MW-7** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | SM 2540C | SAM | 1 | PASI-A |
| **92287261005** | **TRIP BLANK** | EPA 8260 | NB | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92287261001** | **MW-8** | | | | | |
| EPA 300.0 | Chloride | 663 | mg/L | 13.0 | 02/25/16 02:07 | M6,R1 |
| EPA 300.0 | Sulfate | 5.6 | mg/L | 1.0 | 02/24/16 15:35 | |
| EPA 6010 | Antimony | 6.5 | ug/L | 5.0 | 02/24/16 17:44 | |
| EPA 6010 | Barium | 1490 | ug/L | 5.0 | 02/23/16 23:59 | |
| EPA 6010 | Calcium | 137000 | ug/L | 1000 | 02/24/16 18:40 | M6 |
| EPA 6010 | Molybdenum | 5.6 | ug/L | 5.0 | 02/23/16 23:59 | |
| EPA 6010 | Thallium | 8.8 | ug/L | 5.4 | 02/23/16 23:59 | |
| EPA 6010 | Zinc | 14.6 | ug/L | 10.0 | 02/24/16 17:44 | |
| EPA 6020B | Boron | 8.7 | ug/L | 5.0 | 02/24/16 15:33 | |
| EPA 6020B | Lithium | 33.4 | ug/L | 2.5 | 02/25/16 09:01 | |
| EPA 903.1 | Radium-226 | 0.116 ± 0.393 (0.758) C:NA T:90% | pCi/L | | 03/09/16 10:00 | |
| EPA 904.0 | Radium-228 | 1.11 ± 0.456 (0.732) C:85% T:83% | pCi/L | | 03/11/16 12:15 | |
| SM 2540C | Total Dissolved Solids | 1050 | mg/L | 250 | 02/22/16 15:56 | |
| **92287261002** | **AMBIENT BLANK** | | | | | |
| EPA 6010 | Molybdenum | 5.3 | ug/L | 5.0 | 02/24/16 00:08 | |
| EPA 6010 | Thallium | 10.8 | ug/L | 5.4 | 02/24/16 00:08 | |
| EPA 903.1 | Radium-226 | 0.156 ± 0.238 (0.382) C:NA T:98% | pCi/L | | 03/09/16 09:59 | |
| EPA 904.0 | Radium-228 | 0.0823 ± 0.285 (0.644) C:84% T:91% | pCi/L | | 03/11/16 12:15 | |
| **92287261003** | **EQ BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.183 ± 0.494 (0.917) C:NA T:94% | pCi/L | | 03/09/16 10:10 | |
| EPA 904.0 | Radium-228 | 0.367 ± 0.313 (0.629) C:85% T:92% | pCi/L | | 03/11/16 12:15 | |
| **92287261004** | **MW-7** | | | | | |
| EPA 300.0 | Chloride | 330 | mg/L | 9.0 | 02/25/16 04:52 | |
| EPA 300.0 | Fluoride | 0.27 | mg/L | 0.10 | 02/24/16 21:12 | |
| EPA 300.0 | Sulfate | 40.4 | mg/L | 1.0 | 02/24/16 21:12 | |
| EPA 6010 | Barium | 254 | ug/L | 5.0 | 02/24/16 00:15 | |
| EPA 6010 | Calcium | 47900 | ug/L | 100 | 02/24/16 00:15 | |
| EPA 6010 | Chromium | 23.7 | ug/L | 5.0 | 02/24/16 00:15 | |
| EPA 6010 | Nickel | 13.2 | ug/L | 5.0 | 02/24/16 00:15 | |



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## SUMMARY OF DETECTION

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92287261004** | **MW-7** | | | | | |
| EPA 6020B | Boron | 35.3 | ug/L | 5.0 | 02/24/16 15:29 | |
| EPA 6020B | Lithium | 17.7 | ug/L | 2.5 | 02/25/16 09:26 | |
| SM 2540C | Total Dissolved Solids | 950 | mg/L | 50.0 | 02/22/16 15:58 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: MW-8** **Lab ID: 92287261001** Collected: 02/18/16 11:10 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **663** | mg/L | 13.0 | 13 | | 02/25/16 02:07 | 16887-00-6 | M6,R1 |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/24/16 15:35 | 16984-48-8 | |
| Sulfate | **5.6** | mg/L | 1.0 | 1 | | 02/24/16 15:35 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **6.5** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 17:44 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:44 | 7440-38-2 | |
| Barium | **1490** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-43-9 | |
| Calcium | **137000** | ug/L | 1000 | 10 | 02/22/16 16:30 | 02/24/16 18:40 | 7440-70-2 | M6 |
| Chromium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7439-92-1 | |
| Molybdenum | **5.6** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-22-4 | |
| Thallium | **8.8** | ug/L | 5.4 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/23/16 23:59 | 7440-62-2 | |
| Zinc | **14.6** | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:44 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **8.7** | ug/L | 5.0 | 1 | 02/23/16 18:38 | 02/24/16 15:33 | 7440-42-8 | |
| Lithium | **33.4** | ug/L | 2.5 | 5 | 02/23/16 18:38 | 02/25/16 09:01 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/24/16 16:55 | 02/25/16 12:35 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/23/16 02:04 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/23/16 02:04 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/23/16 02:04 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:04 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/23/16 02:04 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: MW-8** **Lab ID: 92287261001** Collected: 02/18/16 11:10 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/23/16 02:04 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/23/16 02:04 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:04 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/23/16 02:04 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:04 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/23/16 02:04 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 02/23/16 02:04 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 92 | % | 70-130 | 1 | | 02/23/16 02:04 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 02/23/16 02:04 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **1050** | mg/L | 250 | 1 | | 02/22/16 15:56 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: AMBIENT BLANK** **Lab ID: 92287261002** Collected: 02/18/16 12:00 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/24/16 16:38 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/24/16 16:38 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/24/16 16:38 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 17:52 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:52 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7439-92-1 | |
| Molybdenum | **5.3** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-22-4 | |
| Thallium | **10.8** | ug/L | 5.4 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:08 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:52 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 02/23/16 18:38 | 02/24/16 15:20 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/23/16 18:38 | 02/24/16 15:20 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/24/16 16:55 | 02/25/16 12:38 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/23/16 02:21 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/23/16 02:21 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/23/16 02:21 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:21 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/23/16 02:21 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: AMBIENT BLANK** **Lab ID: 92287261002** Collected: 02/18/16 12:00 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/23/16 02:21 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/23/16 02:21 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:21 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/23/16 02:21 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:21 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/23/16 02:21 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 102 | % | 70-130 | 1 | | 02/23/16 02:21 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 92 | % | 70-130 | 1 | | 02/23/16 02:21 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 02/23/16 02:21 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 02/22/16 15:57 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: EQ BLANK** **Lab ID: 92287261003** Collected: 02/18/16 12:15 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 02/24/16 20:51 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 02/24/16 20:51 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 02/24/16 20:51 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 17:56 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:56 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:11 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:56 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 02/23/16 18:38 | 02/24/16 15:24 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 02/23/16 18:38 | 02/24/16 15:24 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/24/16 16:55 | 02/25/16 12:40 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/23/16 02:37 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/23/16 02:37 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/23/16 02:37 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:37 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/23/16 02:37 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: EQ BLANK** **Lab ID: 92287261003** Collected: 02/18/16 12:15 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/23/16 02:37 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/23/16 02:37 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:37 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/23/16 02:37 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:37 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/23/16 02:37 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 102 | % | 70-130 | 1 | | 02/23/16 02:37 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 93 | % | 70-130 | 1 | | 02/23/16 02:37 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 02/23/16 02:37 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 02/22/16 15:57 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: MW-7** **Lab ID: 92287261004** Collected: 02/18/16 08:45 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **330** | mg/L | 9.0 | 9 | | 02/25/16 04:52 | 16887-00-6 | |
| Fluoride | **0.27** | mg/L | 0.10 | 1 | | 02/24/16 21:12 | 16984-48-8 | |
| Sulfate | **40.4** | mg/L | 1.0 | 1 | | 02/24/16 21:12 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 17:59 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:59 | 7440-38-2 | |
| Barium | **254** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-43-9 | |
| Calcium | **47900** | ug/L | 100 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-70-2 | |
| Chromium | **23.7** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7439-98-7 | |
| Nickel | **13.2** | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 02/22/16 16:30 | 02/24/16 00:15 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 02/22/16 16:30 | 02/24/16 17:59 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **35.3** | ug/L | 5.0 | 1 | 02/23/16 18:38 | 02/24/16 15:29 | 7440-42-8 | |
| Lithium | **17.7** | ug/L | 2.5 | 5 | 02/23/16 18:38 | 02/25/16 09:26 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 02/24/16 16:55 | 02/25/16 12:42 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/23/16 02:54 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/23/16 02:54 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/23/16 02:54 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:54 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/23/16 02:54 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: MW-7** **Lab ID: 92287261004** Collected: 02/18/16 08:45 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/23/16 02:54 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/23/16 02:54 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/23/16 02:54 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/23/16 02:54 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 02:54 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/23/16 02:54 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 103 | % | 70-130 | 1 | | 02/23/16 02:54 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 93 | % | 70-130 | 1 | | 02/23/16 02:54 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 02/23/16 02:54 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **950** | mg/L | 50.0 | 1 | | 02/22/16 15:58 | | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: TRIP BLANK** **Lab ID: 92287261005** Collected: 02/18/16 07:30 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 02/23/16 03:11 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 02/23/16 03:11 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 02/23/16 03:11 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 02/23/16 03:11 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 02/23/16 03:11 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 02/23/16 03:11 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 02/23/16 03:11 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 02/23/16 03:11 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 02/23/16 03:11 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 02/23/16 03:11 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 02/23/16 03:11 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 02/23/16 03:11 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: TRIP BLANK** **Lab ID: 92287261005** Collected: 02/18/16 07:30 Received: 02/19/16 15:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 93 | % | 70-130 | 1 | | 02/23/16 03:11 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 02/23/16 03:11 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: GWD/2902 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

METHOD BLANK: 1672124 — Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 02/24/16 14:53 | |
| Fluoride | mg/L | ND | 0.10 | 02/24/16 14:53 | |
| Sulfate | mg/L | ND | 1.0 | 02/24/16 14:53 | |

LABORATORY CONTROL SAMPLE: 1672125

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 47.9 | 96 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.4 | 97 | 90-110 | |
| Sulfate | mg/L | 50 | 47.0 | 94 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1672126 1672127

| Parameter | Units | 92287261001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 663 | 50 | 50 | 522 | 704 | -282 | 83 | 90-110 | 30 | 20 | M6,R1 |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.4 | 2.4 | 93 | 95 | 90-110 | 2 | 20 | |
| Sulfate | mg/L | 5.6 | 50 | 50 | 55.4 | 55.9 | 100 | 101 | 90-110 | 1 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: MERP/8993 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

METHOD BLANK: 1672115 Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 02/25/16 11:55 | |

LABORATORY CONTROL SAMPLE: 1672116

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.4 | 96 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1672117 1672118

| Parameter | Units | 92287006001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.4 | 2.2 | 93 | 84 | 75-125 | 10 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: MPRP/20757 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

METHOD BLANK: 1670852 | Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 02/24/16 17:37 | |
| Arsenic | ug/L | ND | 10.0 | 02/24/16 17:37 | |
| Barium | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Beryllium | ug/L | ND | 1.0 | 02/23/16 23:44 | |
| Cadmium | ug/L | ND | 1.0 | 02/23/16 23:44 | |
| Calcium | ug/L | ND | 100 | 02/23/16 23:44 | |
| Chromium | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Cobalt | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Copper | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Lead | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Molybdenum | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Nickel | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Selenium | ug/L | ND | 10.0 | 02/23/16 23:44 | |
| Silver | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Thallium | ug/L | ND | 5.4 | 02/23/16 23:44 | |
| Vanadium | ug/L | ND | 5.0 | 02/23/16 23:44 | |
| Zinc | ug/L | ND | 10.0 | 02/24/16 17:37 | |

LABORATORY CONTROL SAMPLE: 1670853

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 439 | 88 | 80-120 | |
| Arsenic | ug/L | 500 | 498 | 100 | 80-120 | |
| Barium | ug/L | 500 | 547 | 109 | 80-120 | |
| Beryllium | ug/L | 500 | 527 | 105 | 80-120 | |
| Cadmium | ug/L | 500 | 490 | 98 | 80-120 | |
| Calcium | ug/L | 5000 | 5670 | 113 | 80-120 | |
| Chromium | ug/L | 500 | 504 | 101 | 80-120 | |
| Cobalt | ug/L | 500 | 469 | 94 | 80-120 | |
| Copper | ug/L | 500 | 498 | 100 | 80-120 | |
| Lead | ug/L | 500 | 472 | 94 | 80-120 | |
| Molybdenum | ug/L | 500 | 444 | 89 | 80-120 | |
| Nickel | ug/L | 500 | 491 | 98 | 80-120 | |
| Selenium | ug/L | 500 | 471 | 94 | 80-120 | |
| Silver | ug/L | 250 | 214 | 86 | 80-120 | |
| Thallium | ug/L | 500 | 490 | 98 | 80-120 | |
| Vanadium | ug/L | 500 | 520 | 104 | 80-120 | |
| Zinc | ug/L | 500 | 490 | 98 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670854 1670855

| Parameter | Units | 92287261001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | 6.5 | 500 | 500 | 445 | 447 | 88 | 88 | 75-125 | 0 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 502 | 508 | 100 | 101 | 75-125 | 1 | 25 | |
| Barium | ug/L | 1490 | 500 | 500 | 1920 | 1920 | 87 | 87 | 75-125 | 0 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 502 | 503 | 100 | 101 | 75-125 | 0 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 462 | 459 | 92 | 92 | 75-125 | 0 | 25 | |
| Calcium | ug/L | 137000 | 5000 | 5000 | 146000 | 151000 | 174 | 286 | 75-125 | 4 | 25 | M6 |
| Chromium | ug/L | ND | 500 | 500 | 475 | 478 | 94 | 95 | 75-125 | 1 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 415 | 412 | 83 | 82 | 75-125 | 1 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 472 | 471 | 94 | 94 | 75-125 | 0 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 418 | 415 | 84 | 83 | 75-125 | 1 | 25 | |
| Molybdenum | ug/L | 5.6 | 500 | 500 | 417 | 422 | 82 | 83 | 75-125 | 1 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 433 | 432 | 86 | 86 | 75-125 | 0 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 435 | 431 | 87 | 86 | 75-125 | 1 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 206 | 207 | 82 | 82 | 75-125 | 0 | 25 | |
| Thallium | ug/L | 8.8 | 500 | 500 | 429 | 438 | 84 | 86 | 75-125 | 2 | 25 | |
| Vanadium | ug/L | ND | 500 | 500 | 497 | 501 | 99 | 100 | 75-125 | 1 | 25 | |
| Zinc | ug/L | 14.6 | 500 | 500 | 482 | 485 | 93 | 94 | 75-125 | 1 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: MPRP/61593 — Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 — Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

METHOD BLANK: 2197081 — Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 02/24/16 11:32 | |
| Lithium | ug/L | ND | 0.50 | 02/24/16 11:32 | |

LABORATORY CONTROL SAMPLE: 2197082

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 79.8 | 100 | 80-120 | |
| Lithium | ug/L | 80 | 83.1 | 104 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2197083 2197084

| Parameter | Units | 92287261001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 8.7 | 80 | 80 | 94.9 | 91.3 | 108 | 103 | 75-125 | 4 | 20 | |
| Lithium | ug/L | 33.4 | 80 | 80 | 117 | 116 | 105 | 103 | 75-125 | 1 | 20 | |

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## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: MSV/35665 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004, 92287261005

METHOD BLANK: 1670820 Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004, 92287261005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 02/23/16 01:48 | |
| 2-Hexanone | ug/L | ND | 5.0 | 02/23/16 01:48 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 02/23/16 01:48 | |
| Acetone | ug/L | ND | 25.0 | 02/23/16 01:48 | |
| Acrylonitrile | ug/L | ND | 10.0 | 02/23/16 01:48 | |
| Benzene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Bromochloromethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Bromoform | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Bromomethane | ug/L | ND | 2.0 | 02/23/16 01:48 | |
| Carbon disulfide | ug/L | ND | 2.0 | 02/23/16 01:48 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Chlorobenzene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Chloroethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Chloroform | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Chloromethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Dibromomethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Ethylbenzene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Iodomethane | ug/L | ND | 5.0 | 02/23/16 01:48 | |
| Methylene Chloride | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Styrene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Toluene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Trichloroethene | ug/L | ND | 1.0 | 02/23/16 01:48 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

METHOD BLANK: 1670820 Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004, 92287261005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Vinyl acetate | ug/L | ND | 2.0 | 02/23/16 01:48 | |
| Vinyl chloride | ug/L | ND | 1.0 | 02/23/16 01:48 | |
| Xylene (Total) | ug/L | ND | 2.0 | 02/23/16 01:48 | |
| 1,2-Dichloroethane-d4 (S) | % | 90 | 70-130 | 02/23/16 01:48 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 02/23/16 01:48 | |
| Toluene-d8 (S) | % | 101 | 70-130 | 02/23/16 01:48 | |

LABORATORY CONTROL SAMPLE: 1670821

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 49.1 | 98 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 47.3 | 95 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 47.5 | 95 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 47.8 | 96 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 45.1 | 90 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 48.6 | 97 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 47.4 | 95 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 46.7 | 93 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 43.2 | 86 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 46.8 | 94 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.0 | 96 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 88.3 | 88 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 92.7 | 93 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 94.2 | 94 | 72-135 | |
| Acetone | ug/L | 100 | 83.6 | 84 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 237 | 95 | 40-160 | |
| Benzene | ug/L | 50 | 47.5 | 95 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 49.0 | 98 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 48.8 | 98 | 78-124 | |
| Bromoform | ug/L | 50 | 51.2 | 102 | 71-128 | |
| Bromomethane | ug/L | 50 | 35.3 | 71 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 51.0 | 102 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 49.0 | 98 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 47.1 | 94 | 81-122 | |
| Chloroethane | ug/L | 50 | 40.0 | 80 | 39-148 | |
| Chloroform | ug/L | 50 | 46.2 | 92 | 73-127 | |
| Chloromethane | ug/L | 50 | 37.1 | 74 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 45.5 | 91 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.0 | 100 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.4 | 101 | 78-125 | |
| Dibromomethane | ug/L | 50 | 51.0 | 102 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 45.4 | 91 | 79-121 | |
| Iodomethane | ug/L | 100 | 86.2 | 86 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

LABORATORY CONTROL SAMPLE: 1670821

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 47.2 | 94 | 64-133 | |
| Styrene | ug/L | 50 | 47.4 | 95 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 46.5 | 93 | 78-122 | |
| Toluene | ug/L | 50 | 47.1 | 94 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 46.6 | 93 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 49.8 | 100 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 46.8 | 94 | 40-160 | |
| Trichloroethene | ug/L | 50 | 48.3 | 97 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 46.2 | 92 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 92.6 | 93 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 47.0 | 94 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 135 | 90 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 93 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 104 | 70-130 | |
| Toluene-d8 (S) | % | | | 100 | 70-130 | |

MATRIX SPIKE SAMPLE: 1670822

| Parameter | Units | 92287200001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 19.7 | 99 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 17.9 | 90 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.1 | 95 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 19.0 | 95 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 21.0 | 105 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 18.9 | 94 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 18.6 | 93 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 17.1 | 86 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 19.0 | 95 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 31.7 | 79 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 35.7 | 89 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 36.7 | 92 | 70-130 | |
| Acetone | ug/L | ND | 40 | 34.2 | 85 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 84.6 | 85 | 70-130 | |
| Benzene | ug/L | ND | 20 | 20.4 | 102 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 18.1 | 91 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 13.3 | 67 | 70-130 | M1 |
| Carbon disulfide | ug/L | ND | 20 | 21.7 | 108 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 19.5 | 97 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 19.2 | 96 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

MATRIX SPIKE SAMPLE: 1670822

| Parameter | Units | 92287200001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 16.3 | 81 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 19.1 | 96 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.5 | 97 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 19.1 | 96 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 23.6 | 59 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 17.3 | 86 | 70-130 | |
| Styrene | ug/L | ND | 20 | 18.7 | 94 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| Toluene | ug/L | ND | 20 | 19.9 | 100 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 18.9 | 95 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 13.3 | 66 | 70-130 | M1 |
| Trichloroethene | ug/L | ND | 20 | 20.3 | 102 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 25.5 | 64 | 70-130 | M1 |
| Vinyl chloride | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 91 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 100 | 70-130 | |
| Toluene-d8 (S) | % | | | | 100 | 70-130 | |

SAMPLE DUPLICATE: 1670823

| Parameter | Units | 92287200002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

SAMPLE DUPLICATE: 1670823

| Parameter | Units | 92287200002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 91 | 92 | 1 | | |
| 4-Bromofluorobenzene (S) | % | 100 | 103 | 3 | | |
| Toluene-d8 (S) | % | 100 | 102 | 2 | | |

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# QUALITY CONTROL DATA

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: WET/43175 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

METHOD BLANK: 1670521 Matrix: Water
Associated Lab Samples: 92287261001, 92287261002, 92287261003, 92287261004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 02/22/16 15:48 | |

LABORATORY CONTROL SAMPLE: 1670522

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 244 | 98 | 90-110 | |

SAMPLE DUPLICATE: 1670523

| Parameter | Units | 92287225001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | ND | | 5 | |

SAMPLE DUPLICATE: 1670524

| Parameter | Units | 92287230005 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 140000 ug/L | 138 | 1 | 5 | |

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: MW-8** **Lab ID: 92287261001** Collected: 02/18/16 11:10 Received: 02/19/16 15:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.116 ± 0.393 (0.758)**<br>**C:NA T:90%** | pCi/L | 03/09/16 10:00 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.11 ± 0.456 (0.732)**<br>**C:85% T:83%** | pCi/L | 03/11/16 12:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: AMBIENT BLANK** **Lab ID: 92287261002** Collected: 02/18/16 12:00 Received: 02/19/16 15:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.156 ± 0.238 (0.382)**<br>**C:NA T:98%** | pCi/L | 03/09/16 09:59 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.0823 ± 0.285 (0.644)**<br>**C:84% T:91%** | pCi/L | 03/11/16 12:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

**Sample: EQ BLANK** **Lab ID: 92287261003** Collected: 02/18/16 12:15 Received: 02/19/16 15:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.183 ± 0.494 (0.917)**<br>**C:NA T:94%** | pCi/L | 03/09/16 10:10 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.367 ± 0.313 (0.629)**<br>**C:85% T:92%** | pCi/L | 03/11/16 12:15 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: RADC/28153 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92287261001, 92287261002, 92287261003

METHOD BLANK: 1030491 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.0506 ± 0.298 (0.608) C:NA T:100% | pCi/L | 03/09/16 10:10 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

QC Batch: RADC/28159 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92287261001, 92287261002, 92287261003

METHOD BLANK: 1030497 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.379 ± 0.352 (0.722) C:87% T:85% | pCi/L | 03/11/16 12:15 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**

## REPORT OF LABORATORY ANALYSIS

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# QUALIFIERS

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |
| R1 | RPD value was outside control limits. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARRAH - BRICKHAVEN
Pace Project No.: 92287261

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92287261001** | **MW-8** | EPA 300.0 | GWD/2902 | | |
| **92287261002** | **AMBIENT BLANK** | EPA 300.0 | GWD/2902 | | |
| **92287261003** | **EQ BLANK** | EPA 300.0 | GWD/2902 | | |
| **92287261004** | **MW-7** | EPA 300.0 | GWD/2902 | | |
| **92287261001** | **MW-8** | EPA 3010A | MPRP/20757 | EPA 6010 | ICP/18710 |
| **92287261002** | **AMBIENT BLANK** | EPA 3010A | MPRP/20757 | EPA 6010 | ICP/18710 |
| **92287261003** | **EQ BLANK** | EPA 3010A | MPRP/20757 | EPA 6010 | ICP/18710 |
| **92287261004** | **MW-7** | EPA 3010A | MPRP/20757 | EPA 6010 | ICP/18710 |
| **92287261001** | **MW-8** | EPA 3020 | MPRP/61593 | EPA 6020B | ICPM/28436 |
| **92287261002** | **AMBIENT BLANK** | EPA 3020 | MPRP/61593 | EPA 6020B | ICPM/28436 |
| **92287261003** | **EQ BLANK** | EPA 3020 | MPRP/61593 | EPA 6020B | ICPM/28436 |
| **92287261004** | **MW-7** | EPA 3020 | MPRP/61593 | EPA 6020B | ICPM/28436 |
| **92287261001** | **MW-8** | EPA 7470 | MERP/8993 | EPA 7470 | MERC/8643 |
| **92287261002** | **AMBIENT BLANK** | EPA 7470 | MERP/8993 | EPA 7470 | MERC/8643 |
| **92287261003** | **EQ BLANK** | EPA 7470 | MERP/8993 | EPA 7470 | MERC/8643 |
| **92287261004** | **MW-7** | EPA 7470 | MERP/8993 | EPA 7470 | MERC/8643 |
| **92287261001** | **MW-8** | EPA 8260 | MSV/35665 | | |
| **92287261002** | **AMBIENT BLANK** | EPA 8260 | MSV/35665 | | |
| **92287261003** | **EQ BLANK** | EPA 8260 | MSV/35665 | | |
| **92287261004** | **MW-7** | EPA 8260 | MSV/35665 | | |
| **92287261005** | **TRIP BLANK** | EPA 8260 | MSV/35665 | | |
| **92287261001** | **MW-8** | EPA 903.1 | RADC/28153 | | |
| **92287261002** | **AMBIENT BLANK** | EPA 903.1 | RADC/28153 | | |
| **92287261003** | **EQ BLANK** | EPA 903.1 | RADC/28153 | | |
| **92287261001** | **MW-8** | EPA 904.0 | RADC/28159 | | |
| **92287261002** | **AMBIENT BLANK** | EPA 904.0 | RADC/28159 | | |
| **92287261003** | **EQ BLANK** | EPA 904.0 | RADC/28159 | | |
| **92287261001** | **MW-8** | SM 2540C | WET/43175 | | |
| **92287261002** | **AMBIENT BLANK** | SM 2540C | WET/43175 | | |
| **92287261003** | **EQ BLANK** | SM 2540C | WET/43175 | | |
| **92287261004** | **MW-7** | SM 2540C | WET/43175 | | |



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| Pace Analytical® | Document Name: **Sample Condition Upon Receipt(SCUR)** | Document Revised: 26OCT2015 Page 1 of 2 |
|---|---|---|
| | Document No.: **F-CHR-CS-003-rev.17** | Issuing Authority: Pace Huntersville Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Project #:** WO# : 92287261

92287261

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

**Custody Seal on Cooler/Box Present?** ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☐ No

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other:

**Thermometer Used:** ☑ T1505 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Cooler Temp Corrected (°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 °C **Date and Initials of Person Examining Contents:** TH 2-19-16

**USDA Regulated Soil** ( ☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

**If Yes to either question, fill out a Regulated Soil Checklist and include with SCUR/COC paperwork.**

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr)?** | ☐ Yes | ☑ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☑ No | ☐ N/A | 9. VG9U used for line 2 (8260 |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☑ Yes | ☐ No | ☐ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT | ☑ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☑ Yes | ☐ No | ☐ N/A | |
| Samples checked for dechlorization | ☐ Yes | ☐ No | ☑ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☑ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager SCURF Review:** **Date:** 2-19-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1995509

**Section A** Required Client Information:

| | |
|---|---|
| Company: | HDR |
| Address: | |
| | |
| Email To: | |
| Phone: / Fax: | |
| Requested Due Date/TAT: | |

**Section B** Required Project Information:

| | |
|---|---|
| Report To: | Same |
| Copy To: | |
| | |
| Purchase Order No.: | |
| Project Name: | Charah - Brickhaven |
| Project Number: | |

**Section C** Invoice Information:

| | |
|---|---|
| Attention: | |
| Company Name: | |
| Address: | |
| Pace Quote Reference: | |
| Pace Project Manager: | |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COMPOSITE START TIME | COMPOSITE END/GRAB DATE | COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | Metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92287261 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-8 | | G | | | 02/18/16 | 1110 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | MW-7 | | G | | | 02/18/16 | 0845 | | 8 | | | | | | | | | | 2 | 3 | 1 | 1 | 1 | | | 004 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Trip Blank | | G | | | 02/18/16 | 0730 | | 2 | | | | | | | | | | | 2 | | | | | | 005 |
| 5 | Ambient Blank | | G | | | 02/18/16 | 1200 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 002 |
| 6 | EQ. Blank | | G | | | 02/18/16 | 1215 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | | 003 |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS: Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 02/18/16 | 1330 | ~~[illegible] Pace HM~~ | ~~2-18-16~~ | ~~1330~~ | ~~2.9~~ | ~~Y~~ | ~~N~~ | ~~Y~~ |
| | | | | [illegible] | 2/19/16 | 945 | | | | |
| | [illegible] Pace | 2/19/16 | 1500 | [illegible] Pace HM | 2-19-16 | 1500 | 2.9 | Y | N | Y |
| | | | | | | | | | | |

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: Clint Sorrell

DATE Signed (MM/DD/YY): 02/18/16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

May 02, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on April 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92292667001** | **SW-2** | Water | 04/05/16 09:40 | 04/06/16 10:15 |
| **92292667002** | **SW-1** | Water | 04/05/16 10:20 | 04/06/16 10:15 |
| **92292667003** | **BG-1** | Water | 04/05/16 11:20 | 04/06/16 10:15 |
| **92292667004** | **MW-5** | Water | 04/05/16 12:20 | 04/06/16 10:15 |
| **92292667005** | **LEACHATE-1** | Water | 04/05/16 14:10 | 04/06/16 10:15 |
| **92292667006** | **MW-6** | Water | 04/05/16 16:15 | 04/06/16 10:15 |
| **92292667007** | **AMBIENT BLANK** | Water | 04/05/16 11:30 | 04/06/16 10:15 |
| **92292667008** | **EQ. BLANK** | Water | 04/05/16 18:00 | 04/06/16 10:15 |
| **92292667009** | **TRIP BLANK** | Water | 04/05/16 07:00 | 04/06/16 10:15 |



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## SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92292667001** | **SW-2** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667002** | **SW-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667003** | **BG-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667004** | **MW-5** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667005** | **LEACHATE-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667006** | **MW-6** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667007** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667008** | **EQ. BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292667009** | **TRIP BLANK** | EPA 8260 | CCL | 48 | PASI-C |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292667001** | **SW-2** | | | | | |
| EPA 300.0 | Chloride | 13.7 | mg/L | 1.0 | 04/12/16 12:58 | |
| EPA 300.0 | Sulfate | 5.5 | mg/L | 1.0 | 04/12/16 12:58 | |
| EPA 6010 | Barium | 53.0 | ug/L | 5.0 | 04/12/16 01:54 | |
| EPA 6010 | Calcium | 7800 | ug/L | 100 | 04/12/16 01:54 | |
| EPA 6010 | Zinc | 14.2 | ug/L | 10.0 | 04/12/16 01:54 | |
| EPA 6020B | Boron | 34.4 | ug/L | 5.0 | 04/11/16 15:30 | |
| EPA 6020B | Lithium | 1.1 | ug/L | 0.50 | 04/12/16 10:58 | |
| EPA 8260 | Toluene | 13.7 | ug/L | 1.0 | 04/09/16 13:27 | |
| EPA 903.1 | Radium-226 | -0.133 ± 0.304 (0.716) C:NA T:92% | pCi/L | | 05/02/16 10:28 | |
| EPA 904.0 | Radium-228 | 0.397 ± 0.409 (0.849) C:82% T:73% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 121 | mg/L | 25.0 | 04/07/16 17:18 | |
| **92292667002** | **SW-1** | | | | | |
| EPA 300.0 | Chloride | 11.9 | mg/L | 1.0 | 04/12/16 14:04 | |
| EPA 300.0 | Fluoride | 0.10 | mg/L | 0.10 | 04/12/16 14:04 | |
| EPA 300.0 | Sulfate | 3.5 | mg/L | 1.0 | 04/12/16 14:04 | |
| EPA 6010 | Barium | 59.8 | ug/L | 5.0 | 04/12/16 02:06 | |
| EPA 6010 | Calcium | 2880 | ug/L | 100 | 04/12/16 02:06 | |
| EPA 6020B | Boron | 11.2 | ug/L | 5.0 | 04/11/16 15:44 | |
| EPA 6020B | Lithium | 1.5 | ug/L | 0.50 | 04/12/16 11:12 | |
| EPA 903.1 | Radium-226 | 0.499 ± 0.507 (0.767) C:NA T:91% | pCi/L | | 05/02/16 10:29 | |
| EPA 904.0 | Radium-228 | 0.761 ± 0.424 (0.772) C:82% T:81% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 94.0 | mg/L | 25.0 | 04/07/16 17:19 | |
| **92292667003** | **BG-1** | | | | | |
| EPA 300.0 | Chloride | 264 | mg/L | 5.0 | 04/13/16 04:45 | |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 04/12/16 14:26 | |
| EPA 300.0 | Sulfate | 19.6 | mg/L | 1.0 | 04/12/16 14:26 | |
| EPA 6010 | Barium | 302 | ug/L | 5.0 | 04/12/16 02:09 | |
| EPA 6010 | Calcium | 27300 | ug/L | 100 | 04/12/16 02:09 | |
| EPA 6020B | Boron | 6.0 | ug/L | 5.0 | 04/11/16 15:47 | |
| EPA 6020B | Lithium | 36.8 | ug/L | 2.5 | 04/12/16 11:15 | |
| EPA 903.1 | Radium-226 | 0.407 ± 0.423 (0.630) C:NA T:92% | pCi/L | | 05/02/16 10:28 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292667003** | **BG-1** | | | | | |
| EPA 904.0 | Radium-228 | 0.828 ± 0.409 (0.714) C:82% T:87% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 628 | mg/L | 25.0 | 04/07/16 17:19 | |
| **92292667004** | **MW-5** | | | | | |
| EPA 300.0 | Chloride | 18.0 | mg/L | 1.0 | 04/12/16 14:48 | |
| EPA 300.0 | Fluoride | 0.52 | mg/L | 0.10 | 04/12/16 14:48 | |
| EPA 300.0 | Sulfate | 3.1 | mg/L | 1.0 | 04/12/16 14:48 | |
| EPA 6010 | Barium | 91.4 | ug/L | 5.0 | 04/12/16 02:13 | |
| EPA 6010 | Calcium | 10100 | ug/L | 100 | 04/12/16 02:13 | |
| EPA 6010 | Zinc | 36.1 | ug/L | 10.0 | 04/12/16 02:13 | |
| EPA 6020B | Boron | 12.1 | ug/L | 5.0 | 04/11/16 15:50 | |
| EPA 6020B | Lithium | 9.7 | ug/L | 2.5 | 04/12/16 11:21 | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.310 (0.632) C:NA T:93% | pCi/L | | 05/02/16 10:32 | |
| EPA 904.0 | Radium-228 | 0.951 ± 0.430 (0.731) C:83% T:90% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 194 | mg/L | 25.0 | 04/07/16 17:20 | |
| **92292667005** | **LEACHATE-1** | | | | | |
| EPA 300.0 | Chloride | 239 | mg/L | 5.0 | 04/13/16 05:14 | |
| EPA 300.0 | Fluoride | 0.34 | mg/L | 0.10 | 04/12/16 15:10 | |
| EPA 300.0 | Sulfate | 94.5 | mg/L | 1.0 | 04/12/16 15:10 | |
| EPA 6010 | Antimony | 10.7 | ug/L | 5.0 | 04/12/16 02:16 | |
| EPA 6010 | Arsenic | 11.6 | ug/L | 10.0 | 04/12/16 02:16 | |
| EPA 6010 | Barium | 177 | ug/L | 5.0 | 04/12/16 02:16 | |
| EPA 6010 | Calcium | 102000 | ug/L | 500 | 04/12/16 16:31 | |
| EPA 6010 | Chromium | 8.6 | ug/L | 5.0 | 04/12/16 02:16 | |
| EPA 6010 | Molybdenum | 133 | ug/L | 5.0 | 04/12/16 02:16 | |
| EPA 6010 | Selenium | 246 | ug/L | 10.0 | 04/12/16 02:16 | |
| EPA 6010 | Vanadium | 27.6 | ug/L | 5.0 | 04/12/16 02:16 | |
| EPA 6020B | Boron | 690 | ug/L | 25.0 | 04/12/16 11:30 | |
| EPA 6020B | Lithium | 40.0 | ug/L | 2.5 | 04/12/16 11:30 | |
| EPA 903.1 | Radium-226 | 0.283 ± 0.440 (0.761) C:NA T:91% | pCi/L | | 05/02/16 10:41 | |
| EPA 904.0 | Radium-228 | 0.742 ± 0.408 (0.740) C:82% T:85% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 516 | mg/L | 25.0 | 04/07/16 17:20 | |



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## SUMMARY OF DETECTION

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292667006** | **MW-6** | | | | | |
| EPA 300.0 | Chloride | 15.3 | mg/L | 1.0 | 04/12/16 15:32 | |
| EPA 300.0 | Fluoride | 0.18 | mg/L | 0.10 | 04/12/16 15:32 | |
| EPA 300.0 | Sulfate | 214 | mg/L | 4.0 | 04/13/16 05:42 | |
| EPA 6010 | Barium | 108 | ug/L | 5.0 | 04/12/16 02:19 | |
| EPA 6010 | Calcium | 33600 | ug/L | 100 | 04/12/16 02:19 | |
| EPA 6020B | Boron | 10.8 | ug/L | 5.0 | 04/11/16 16:01 | |
| EPA 6020B | Lithium | 41.2 | ug/L | 2.5 | 04/12/16 11:33 | |
| EPA 903.1 | Radium-226 | -0.068 ± 0.310 (0.730) C:NA T:93% | pCi/L | | 05/02/16 10:41 | |
| EPA 904.0 | Radium-228 | 0.912 ± 0.437 (0.747) C:81% T:79% | pCi/L | | 04/29/16 14:45 | |
| SM 2540C | Total Dissolved Solids | 689 | mg/L | 25.0 | 04/07/16 17:20 | |
| **92292667007** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.192 ± 0.294 (0.472) C:NA T:97% | pCi/L | | 05/02/16 10:42 | |
| EPA 904.0 | Radium-228 | 0.603 ± 0.369 (0.693) C:82% T:89% | pCi/L | | 04/29/16 14:46 | |
| **92292667008** | **EQ. BLANK** | | | | | |
| EPA 6010 | Zinc | 10.5 | ug/L | 10.0 | 04/12/16 02:25 | |
| EPA 903.1 | Radium-226 | 0.212 ± 0.323 (0.191) C:NA T:90% | pCi/L | | 05/02/16 10:52 | |
| EPA 904.0 | Radium-228 | 0.512 ± 0.370 (0.725) C:83% T:86% | pCi/L | | 04/29/16 14:46 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-2** **Lab ID: 92292667001** Collected: 04/05/16 09:40 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **13.7** | mg/L | 1.0 | 1 | | 04/12/16 12:58 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 12:58 | 16984-48-8 | |
| Sulfate | **5.5** | mg/L | 1.0 | 1 | | 04/12/16 12:58 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-38-2 | |
| Barium | **53.0** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-43-9 | |
| Calcium | **7800** | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-62-2 | |
| Zinc | **14.2** | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 01:54 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **34.4** | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 15:30 | 7440-42-8 | |
| Lithium | **1.1** | ug/L | 0.50 | 1 | 04/08/16 11:47 | 04/12/16 10:58 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:29 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 13:27 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 13:27 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 13:27 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 13:27 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 13:27 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-2** **Lab ID: 92292667001** Collected: 04/05/16 09:40 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 13:27 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 13:27 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 13:27 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 127-18-4 | |
| Toluene | **13.7** | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 13:27 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:27 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 13:27 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | 1 | | 04/09/16 13:27 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 04/09/16 13:27 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 13:27 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **121** | mg/L | 25.0 | 1 | | 04/07/16 17:18 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-1** **Lab ID: 92292667002** Collected: 04/05/16 10:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **11.9** | mg/L | 1.0 | 1 | | 04/12/16 14:04 | 16887-00-6 | |
| Fluoride | **0.10** | mg/L | 0.10 | 1 | | 04/12/16 14:04 | 16984-48-8 | |
| Sulfate | **3.5** | mg/L | 1.0 | 1 | | 04/12/16 14:04 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-38-2 | |
| Barium | **59.8** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-43-9 | |
| Calcium | **2880** | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:06 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **11.2** | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 15:44 | 7440-42-8 | |
| Lithium | **1.5** | ug/L | 0.50 | 1 | 04/08/16 11:47 | 04/12/16 11:12 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:31 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 12:36 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 12:36 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 12:36 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 12:36 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 12:36 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-1** **Lab ID: 92292667002** Collected: 04/05/16 10:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 12:36 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 12:36 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 12:36 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 12:36 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 12:36 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 12:36 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 04/09/16 12:36 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 105 | % | 70-130 | 1 | | 04/09/16 12:36 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 04/09/16 12:36 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **94.0** | mg/L | 25.0 | 1 | | 04/07/16 17:19 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: BG-1** **Lab ID: 92292667003** Collected: 04/05/16 11:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **264** | mg/L | 5.0 | 5 | | 04/13/16 04:45 | 16887-00-6 | |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 04/12/16 14:26 | 16984-48-8 | |
| Sulfate | **19.6** | mg/L | 1.0 | 1 | | 04/12/16 14:26 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-38-2 | |
| Barium | **302** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-43-9 | |
| Calcium | **27300** | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:09 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **6.0** | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 15:47 | 7440-42-8 | |
| Lithium | **36.8** | ug/L | 2.5 | 5 | 04/08/16 11:47 | 04/12/16 11:15 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:38 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 13:44 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 13:44 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 13:44 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 13:44 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 13:44 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: BG-1** **Lab ID: 92292667003** Collected: 04/05/16 11:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 13:44 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 13:44 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 13:44 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 13:44 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 13:44 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 13:44 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/09/16 13:44 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/09/16 13:44 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 04/09/16 13:44 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **628** | mg/L | 25.0 | 1 | | 04/07/16 17:19 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-5** **Lab ID: 92292667004** Collected: 04/05/16 12:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **18.0** | mg/L | 1.0 | 1 | | 04/12/16 14:48 | 16887-00-6 | |
| Fluoride | **0.52** | mg/L | 0.10 | 1 | | 04/12/16 14:48 | 16984-48-8 | |
| Sulfate | **3.1** | mg/L | 1.0 | 1 | | 04/12/16 14:48 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-38-2 | |
| Barium | **91.4** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-43-9 | |
| Calcium | **10100** | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-62-2 | |
| Zinc | **36.1** | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:13 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **12.1** | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 15:50 | 7440-42-8 | |
| Lithium | **9.7** | ug/L | 2.5 | 5 | 04/08/16 11:47 | 04/12/16 11:21 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:41 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 08:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 08:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 08:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 08:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 08:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-5** **Lab ID: 92292667004** Collected: 04/05/16 12:20 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 08:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 08:52 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 08:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 08:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 08:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 08:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 04/09/16 08:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 04/09/16 08:52 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 08:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **194** | mg/L | 25.0 | 1 | | 04/07/16 17:20 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: LEACHATE-1** **Lab ID: 92292667005** Collected: 04/05/16 14:10 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **239** | mg/L | 5.0 | 5 | | 04/13/16 05:14 | 16887-00-6 | |
| Fluoride | **0.34** | mg/L | 0.10 | 1 | | 04/12/16 15:10 | 16984-48-8 | |
| Sulfate | **94.5** | mg/L | 1.0 | 1 | | 04/12/16 15:10 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **10.7** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-36-0 | |
| Arsenic | **11.6** | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-38-2 | |
| Barium | **177** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-43-9 | |
| Calcium | **102000** | ug/L | 500 | 5 | 04/08/16 15:10 | 04/12/16 16:31 | 7440-70-2 | |
| Chromium | **8.6** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7439-92-1 | |
| Molybdenum | **133** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-02-0 | |
| Selenium | **246** | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-28-0 | |
| Vanadium | **27.6** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:16 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **690** | ug/L | 25.0 | 5 | 04/08/16 11:47 | 04/12/16 11:30 | 7440-42-8 | |
| Lithium | **40.0** | ug/L | 2.5 | 5 | 04/08/16 11:47 | 04/12/16 11:30 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:43 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 09:09 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 09:09 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 09:09 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:09 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 09:09 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: LEACHATE-1** **Lab ID: 92292667005** Collected: 04/05/16 14:10 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 09:09 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 09:09 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:09 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 09:09 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:09 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 09:09 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 04/09/16 09:09 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/09/16 09:09 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 04/09/16 09:09 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **516** | mg/L | 25.0 | 1 | | 04/07/16 17:20 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-6** **Lab ID: 92292667006** Collected: 04/05/16 16:15 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **15.3** | mg/L | 1.0 | 1 | | 04/12/16 15:32 | 16887-00-6 | |
| Fluoride | **0.18** | mg/L | 0.10 | 1 | | 04/12/16 15:32 | 16984-48-8 | |
| Sulfate | **214** | mg/L | 4.0 | 4 | | 04/13/16 05:42 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-38-2 | |
| Barium | **108** | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-43-9 | |
| Calcium | **33600** | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:19 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **10.8** | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 16:01 | 7440-42-8 | |
| Lithium | **41.2** | ug/L | 2.5 | 5 | 04/08/16 11:47 | 04/12/16 11:33 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:45 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 09:26 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 09:26 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 09:26 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:26 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 09:26 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-6** **Lab ID: 92292667006** Collected: 04/05/16 16:15 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 09:26 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 09:26 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:26 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 09:26 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:26 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 09:26 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/09/16 09:26 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/09/16 09:26 | 17060-07-0 | |
| Toluene-d8 (S) | 104 | % | 70-130 | 1 | | 04/09/16 09:26 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **689** | mg/L | 25.0 | 1 | | 04/07/16 17:20 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: AMBIENT BLANK** **Lab ID: 92292667007** Collected: 04/05/16 11:30 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 15:54 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 15:54 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 15:54 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:22 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 16:04 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/08/16 11:47 | 04/12/16 11:36 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:48 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 09:44 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 09:44 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 09:44 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:44 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 09:44 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: AMBIENT BLANK** **Lab ID: 92292667007** Collected: 04/05/16 11:30 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 09:44 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 09:44 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 09:44 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 09:44 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 09:44 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 09:44 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | 1 | | 04/09/16 09:44 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 04/09/16 09:44 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 04/09/16 09:44 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 04/07/16 17:21 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: EQ. BLANK** **Lab ID: 92292667008** Collected: 04/05/16 18:00 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 16:16 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 16:16 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 16:16 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-62-2 | |
| Zinc | **10.5** | ug/L | 10.0 | 1 | 04/08/16 15:10 | 04/12/16 02:25 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/08/16 11:47 | 04/11/16 16:07 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/08/16 11:47 | 04/12/16 11:39 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/08/16 17:50 | 04/09/16 19:50 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 10:01 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 10:01 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 10:01 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:01 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 10:01 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: EQ. BLANK** **Lab ID: 92292667008** Collected: 04/05/16 18:00 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 10:01 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 10:01 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:01 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 10:01 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:01 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 10:01 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 97 | % | 70-130 | 1 | | 04/09/16 10:01 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/09/16 10:01 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 10:01 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 04/07/16 17:21 | | |



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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: TRIP BLANK** **Lab ID: 92292667009** Collected: 04/05/16 07:00 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 04:35 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 04:35 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 04:35 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:35 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 04:35 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 04:35 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 04:35 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:35 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 04:35 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:35 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 04:35 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 04/09/16 04:35 | 460-00-4 | |

## REPORT OF LABORATORY ANALYSIS

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# ANALYTICAL RESULTS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: TRIP BLANK** **Lab ID: 92292667009** Collected: 04/05/16 07:00 Received: 04/06/16 10:15 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/09/16 04:35 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 04:35 | 2037-26-5 | |



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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: GWD/3044 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1707225 — Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 04/12/16 12:14 | |
| Fluoride | mg/L | ND | 0.10 | 04/12/16 12:14 | |
| Sulfate | mg/L | ND | 1.0 | 04/12/16 12:14 | |

LABORATORY CONTROL SAMPLE: 1707226

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 51.7 | 103 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.6 | 104 | 90-110 | |
| Sulfate | mg/L | 50 | 50.1 | 100 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707227 1707228

| Parameter | Units | 92292667001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 13.7 | 50 | 50 | 64.2 | 64.7 | 101 | 102 | 90-110 | 1 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.5 | 2.6 | 98 | 99 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 5.5 | 50 | 50 | 55.7 | 56.3 | 100 | 102 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707229 1707230

| Parameter | Units | 92292932003 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 342 | 50 | 50 | 384 | 386 | 84 | 89 | 90-110 | 1 | 20 | M6 |
| Fluoride | mg/L | 0.13 | 2.5 | 2.5 | 2.5 | 2.6 | 97 | 99 | 90-110 | 2 | 20 | |
| Sulfate | mg/L | 10.5 | 50 | 50 | 60.3 | 61.3 | 100 | 102 | 90-110 | 2 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: MERP/9220 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1703999 | Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 04/09/16 19:10 | |

LABORATORY CONTROL SAMPLE: 1704000

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.5 | 98 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1704001 1704002

| Parameter | Units | 92290162023 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.4 | 2.4 | 96 | 95 | 75-125 | 1 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: MPRP/21287 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1704440 | Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Arsenic | ug/L | ND | 10.0 | 04/12/16 01:36 | |
| Barium | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Beryllium | ug/L | ND | 1.0 | 04/12/16 01:36 | |
| Cadmium | ug/L | ND | 1.0 | 04/12/16 01:36 | |
| Calcium | ug/L | ND | 100 | 04/12/16 01:36 | |
| Chromium | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Cobalt | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Copper | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Lead | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Molybdenum | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Nickel | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Selenium | ug/L | ND | 10.0 | 04/12/16 01:36 | |
| Silver | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Thallium | ug/L | ND | 5.4 | 04/12/16 01:36 | |
| Vanadium | ug/L | ND | 5.0 | 04/12/16 01:36 | |
| Zinc | ug/L | ND | 10.0 | 04/12/16 01:36 | |

LABORATORY CONTROL SAMPLE: 1704441

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 473 | 95 | 80-120 | |
| Arsenic | ug/L | 500 | 445 | 89 | 80-120 | |
| Barium | ug/L | 500 | 496 | 99 | 80-120 | |
| Beryllium | ug/L | 500 | 486 | 97 | 80-120 | |
| Cadmium | ug/L | 500 | 475 | 95 | 80-120 | |
| Calcium | ug/L | 5000 | 4990 | 100 | 80-120 | |
| Chromium | ug/L | 500 | 474 | 95 | 80-120 | |
| Cobalt | ug/L | 500 | 464 | 93 | 80-120 | |
| Copper | ug/L | 500 | 480 | 96 | 80-120 | |
| Lead | ug/L | 500 | 465 | 93 | 80-120 | |
| Molybdenum | ug/L | 500 | 500 | 100 | 80-120 | |
| Nickel | ug/L | 500 | 472 | 94 | 80-120 | |
| Selenium | ug/L | 500 | 469 | 94 | 80-120 | |
| Silver | ug/L | 250 | 242 | 97 | 80-120 | |
| Thallium | ug/L | 500 | 467 | 93 | 80-120 | |
| Vanadium | ug/L | 500 | 462 | 92 | 80-120 | |
| Zinc | ug/L | 500 | 458 | 92 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1704442 1704443

| Parameter | Units | 92292081006 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 470 | 457 | 94 | 91 | 75-125 | 3 | 25 | |
| Arsenic | ug/L | 3.0J | 500 | 500 | 445 | 435 | 88 | 86 | 75-125 | 2 | 25 | |
| Barium | ug/L | 19.6 | 500 | 500 | 509 | 495 | 98 | 95 | 75-125 | 3 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 484 | 473 | 97 | 95 | 75-125 | 2 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 472 | 458 | 94 | 92 | 75-125 | 3 | 25 | |
| Calcium | ug/L | 7240 | 5000 | 5000 | 12200 | 12100 | 100 | 98 | 75-125 | 1 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 473 | 460 | 94 | 92 | 75-125 | 3 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 461 | 446 | 92 | 89 | 75-125 | 3 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 481 | 464 | 96 | 93 | 75-125 | 4 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 457 | 445 | 91 | 89 | 75-125 | 3 | 25 | |
| Molybdenum | ug/L | ND | 500 | 500 | 498 | 484 | 100 | 97 | 75-125 | 3 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 470 | 456 | 94 | 91 | 75-125 | 3 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 464 | 451 | 93 | 90 | 75-125 | 3 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 241 | 235 | 97 | 94 | 75-125 | 3 | 25 | |
| Thallium | ug/L | ND | 500 | 500 | 463 | 454 | 92 | 91 | 75-125 | 2 | 25 | |
| Vanadium | ug/L | ND | 500 | 500 | 463 | 450 | 92 | 90 | 75-125 | 3 | 25 | |
| Zinc | ug/L | 5.7J | 500 | 500 | 458 | 444 | 91 | 88 | 75-125 | 3 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: MPRP/62482 | Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 | Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 2226863 | Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 04/11/16 15:24 | |
| Lithium | ug/L | ND | 0.50 | 04/12/16 10:53 | |

LABORATORY CONTROL SAMPLE: 2226864

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 82.6 | 103 | 80-120 | |
| Lithium | ug/L | 80 | 83.7 | 105 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2226865 2226866

| Parameter | Units | 92292667001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 34.4 | 80 | 80 | 118 | 113 | 104 | 98 | 75-125 | 4 | 20 | |
| Lithium | ug/L | 1.1 | 80 | 80 | 84.1 | 82.6 | 104 | 102 | 75-125 | 2 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: MSV/36304 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92292667004, 92292667005, 92292667006, 92292667007, 92292667008, 92292667009

METHOD BLANK: 1705596 Matrix: Water
Associated Lab Samples: 92292667004, 92292667005, 92292667006, 92292667007, 92292667008, 92292667009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| 2-Hexanone | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| Acetone | ug/L | ND | 25.0 | 04/09/16 03:43 | |
| Acrylonitrile | ug/L | ND | 10.0 | 04/09/16 03:43 | |
| Benzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromochloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromoform | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromomethane | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Carbon disulfide | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloroform | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Dibromomethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Ethylbenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Iodomethane | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| Methylene Chloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Styrene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Toluene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Trichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

METHOD BLANK: 1705596 Matrix: Water
Associated Lab Samples: 92292667004, 92292667005, 92292667006, 92292667007, 92292667008, 92292667009

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Vinyl acetate | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Vinyl chloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Xylene (Total) | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 70-130 | 04/09/16 03:43 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 04/09/16 03:43 | |
| Toluene-d8 (S) | % | 100 | 70-130 | 04/09/16 03:43 | |

LABORATORY CONTROL SAMPLE: 1705597

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 49.6 | 99 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 47.8 | 96 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 50.1 | 100 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 46.8 | 94 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 47.0 | 94 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 49.1 | 98 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 49.4 | 99 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 47.5 | 95 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.2 | 88 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 46.6 | 93 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.1 | 96 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 99.8 | 100 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 107 | 107 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 104 | 104 | 72-135 | |
| Acetone | ug/L | 100 | 102 | 102 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 284 | 114 | 40-160 | |
| Benzene | ug/L | 50 | 47.5 | 95 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 45.3 | 91 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 47.0 | 94 | 78-124 | |
| Bromoform | ug/L | 50 | 49.5 | 99 | 71-128 | |
| Bromomethane | ug/L | 50 | 34.2 | 68 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 48.3 | 97 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 47.9 | 96 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 48.2 | 96 | 81-122 | |
| Chloroethane | ug/L | 50 | 43.8 | 88 | 39-148 | |
| Chloroform | ug/L | 50 | 46.3 | 93 | 73-127 | |
| Chloromethane | ug/L | 50 | 44.8 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 46.4 | 93 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 47.7 | 95 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.3 | 101 | 78-125 | |
| Dibromomethane | ug/L | 50 | 45.7 | 91 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 47.9 | 96 | 79-121 | |
| Iodomethane | ug/L | 100 | 84.9 | 85 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

LABORATORY CONTROL SAMPLE: 1705597

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 48.8 | 98 | 64-133 | |
| Styrene | ug/L | 50 | 48.9 | 98 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 47.1 | 94 | 78-122 | |
| Toluene | ug/L | 50 | 46.9 | 94 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 48.1 | 96 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 48.3 | 97 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 49.3 | 99 | 40-160 | |
| Trichloroethene | ug/L | 50 | 46.5 | 93 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 45.0 | 90 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 92.6 | 93 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 49.2 | 98 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 142 | 95 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 98 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1705598

| Parameter | Units | 92292398002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 22.8 | 114 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 24.1 | 120 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 19.5 | 97 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 43.8 | 109 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 44.5 | 111 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 42.3 | 106 | 70-130 | |
| Acetone | ug/L | ND | 40 | 44.4 | 111 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 124 | 124 | 70-130 | |
| Benzene | ug/L | ND | 20 | 22.4 | 112 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.7 | 103 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 23.5 | 118 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 22.3 | 111 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 21.7 | 109 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

MATRIX SPIKE SAMPLE: 1705598

| Parameter | Units | 92292398002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 20.5 | 102 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 20.4 | 102 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 22.3 | 111 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 44.9 | 112 | 70-130 | |
| Methylene Chloride | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| Styrene | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 21.7 | 109 | 70-130 | |
| Toluene | ug/L | ND | 20 | 22.0 | 110 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 22.1 | 111 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 20.8 | 104 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 19.0 | 95 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 22.0 | 110 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 32.5 | 81 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 24.2 | 121 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 100 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 102 | 70-130 | |
| Toluene-d8 (S) | % | | | | 98 | 70-130 | |

SAMPLE DUPLICATE: 1705599

| Parameter | Units | 92292398003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

SAMPLE DUPLICATE: 1705599

| Parameter | Units | 92292398003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 100 | 3 | | |
| 4-Bromofluorobenzene (S) | % | 98 | 100 | 2 | | |
| Toluene-d8 (S) | % | 101 | 99 | 2 | | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: MSV/36305 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92292667001, 92292667002, 92292667003

METHOD BLANK: 1705600 Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| 2-Hexanone | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| Acetone | ug/L | ND | 25.0 | 04/09/16 04:00 | |
| Acrylonitrile | ug/L | ND | 10.0 | 04/09/16 04:00 | |
| Benzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromochloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromoform | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromomethane | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Carbon disulfide | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloroform | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Dibromomethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Ethylbenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Iodomethane | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| Methylene Chloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Styrene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Toluene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Trichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

METHOD BLANK: 1705600 Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Vinyl acetate | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Vinyl chloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Xylene (Total) | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 70-130 | 04/09/16 04:00 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 04/09/16 04:00 | |
| Toluene-d8 (S) | % | 102 | 70-130 | 04/09/16 04:00 | |

LABORATORY CONTROL SAMPLE: 1705601

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 50.9 | 102 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 50.4 | 101 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 50.4 | 101 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 47.3 | 95 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 48.1 | 96 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 51.6 | 103 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 50.5 | 101 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 48.1 | 96 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.2 | 88 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 47.7 | 95 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.9 | 98 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 98.6 | 99 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 105 | 105 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 103 | 103 | 72-135 | |
| Acetone | ug/L | 100 | 97.1 | 97 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 281 | 112 | 40-160 | |
| Benzene | ug/L | 50 | 49.5 | 99 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 45.5 | 91 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 48.1 | 96 | 78-124 | |
| Bromoform | ug/L | 50 | 48.6 | 97 | 71-128 | |
| Bromomethane | ug/L | 50 | 37.3 | 75 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 51.0 | 102 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 50.2 | 100 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 49.6 | 99 | 81-122 | |
| Chloroethane | ug/L | 50 | 45.3 | 91 | 39-148 | |
| Chloroform | ug/L | 50 | 46.9 | 94 | 73-127 | |
| Chloromethane | ug/L | 50 | 45.2 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 47.6 | 95 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 49.3 | 99 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.4 | 101 | 78-125 | |
| Dibromomethane | ug/L | 50 | 46.6 | 93 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 49.7 | 99 | 79-121 | |
| Iodomethane | ug/L | 100 | 88.6 | 89 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

LABORATORY CONTROL SAMPLE: 1705601

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 49.3 | 99 | 64-133 | |
| Styrene | ug/L | 50 | 50.3 | 101 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 48.9 | 98 | 78-122 | |
| Toluene | ug/L | 50 | 49.1 | 98 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 50.4 | 101 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 48.8 | 98 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 45.9 | 92 | 40-160 | |
| Trichloroethene | ug/L | 50 | 48.6 | 97 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 48.8 | 98 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 91.4 | 91 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 51.8 | 104 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 146 | 97 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 96 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1705602

| Parameter | Units | 92292290018 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 22.6 | 113 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 19.9 | 99 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 18.6 | 92 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 40.8 | 102 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 41.3 | 103 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 39.9 | 100 | 70-130 | |
| Acetone | ug/L | ND | 40 | 37.7 | 94 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 115 | 115 | 70-130 | |
| Benzene | ug/L | ND | 20 | 21.3 | 107 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 19.9 | 99 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 18.6 | 93 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 21.7 | 108 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 20.9 | 105 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

MATRIX SPIKE SAMPLE: 1705602

| Parameter | Units | 92292290018 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 20.4 | 102 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.7 | 98 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 43.9 | 110 | 70-130 | |
| Methylene Chloride | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| Styrene | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| Toluene | ug/L | ND | 20 | 21.1 | 106 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 18.3 | 92 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 20.8 | 104 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 30.2 | 76 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 22.8 | 114 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 101 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | | 100 | 70-130 | |

SAMPLE DUPLICATE: 1705603

| Parameter | Units | 92292290019 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

SAMPLE DUPLICATE: 1705603

| Parameter | Units | 92292290019 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 105 | 102 | 3 | | |
| 4-Bromofluorobenzene (S) | % | 100 | 98 | 2 | | |
| Toluene-d8 (S) | % | 103 | 101 | 2 | | |

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# QUALITY CONTROL DATA

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: WET/44096 — Analysis Method: SM 2540C
QC Batch Method: SM 2540C — Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1704626 — Matrix: Water
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 04/07/16 17:12 | |

LABORATORY CONTROL SAMPLE: 1704627

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 236 | 94 | 90-110 | |

SAMPLE DUPLICATE: 1704628

| Parameter | Units | 92292607010 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | ND | | 5 | |

SAMPLE DUPLICATE: 1704629

| Parameter | Units | 92292612011 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 169 | 156 | 8 | 5 | D6 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-2** **Lab ID: 92292667001** Collected: 04/05/16 09:40 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.133 ± 0.304 (0.716) C:NA T:92%** | pCi/L | 05/02/16 10:28 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.397 ± 0.409 (0.849) C:82% T:73%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: SW-1** **Lab ID: 92292667002** Collected: 04/05/16 10:20 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.499 ± 0.507 (0.767)**<br>**C:NA T:91%** | pCi/L | 05/02/16 10:29 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.761 ± 0.424 (0.772)**<br>**C:82% T:81%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: BG-1** **Lab ID: 92292667003** Collected: 04/05/16 11:20 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.407 ± 0.423 (0.630)**<br>**C:NA T:92%** | pCi/L | 05/02/16 10:28 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.828 ± 0.409 (0.714)**<br>**C:82% T:87%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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# ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-5** **Lab ID: 92292667004** Collected: 04/05/16 12:20 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.310 (0.632)**<br>**C:NA T:93%** | pCi/L | 05/02/16 10:32 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.951 ± 0.430 (0.731)**<br>**C:83% T:90%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: LEACHATE-1** **Lab ID: 92292667005** Collected: 04/05/16 14:10 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.283 ± 0.440 (0.761)**<br>**C:NA T:91%** | pCi/L | 05/02/16 10:41 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.742 ± 0.408 (0.740)**<br>**C:82% T:85%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: MW-6** **Lab ID: 92292667006** Collected: 04/05/16 16:15 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.068 ± 0.310 (0.730) C:NA T:93%** | pCi/L | 05/02/16 10:41 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.912 ± 0.437 (0.747) C:81% T:79%** | pCi/L | 04/29/16 14:45 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: AMBIENT BLANK** **Lab ID: 92292667007** Collected: 04/05/16 11:30 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.192 ± 0.294 (0.472)**<br>**C:NA T:97%** | pCi/L | 05/02/16 10:42 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.603 ± 0.369 (0.693)**<br>**C:82% T:89%** | pCi/L | 04/29/16 14:46 | 15262-20-1 | |



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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

**Sample: EQ. BLANK** **Lab ID: 92292667008** Collected: 04/05/16 18:00 Received: 04/06/16 10:15 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.212 ± 0.323 (0.191)**<br>**C:NA T:90%** | pCi/L | 05/02/16 10:52 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.512 ± 0.370 (0.725)**<br>**C:83% T:86%** | pCi/L | 04/29/16 14:46 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: RADC/29085 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1063308 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.248 ± 0.339 (0.726) C:79% T:84% | pCi/L | 04/29/16 11:33 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

QC Batch: RADC/29080 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92292667001, 92292667002, 92292667003, 92292667004, 92292667005, 92292667006, 92292667007, 92292667008

METHOD BLANK: 1063303 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.135 ± 0.309 (0.497) C:NA T:91% | pCi/L | 05/02/16 10:06 | |

**Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.**



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# QUALIFIERS

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| D6 | The precision between the sample and sample duplicate exceeded laboratory control limits. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92292667001** | **SW-2** | EPA 300.0 | GWD/3044 | | |
| **92292667002** | **SW-1** | EPA 300.0 | GWD/3044 | | |
| **92292667003** | **BG-1** | EPA 300.0 | GWD/3044 | | |
| **92292667004** | **MW-5** | EPA 300.0 | GWD/3044 | | |
| **92292667005** | **LEACHATE-1** | EPA 300.0 | GWD/3044 | | |
| **92292667006** | **MW-6** | EPA 300.0 | GWD/3044 | | |
| **92292667007** | **AMBIENT BLANK** | EPA 300.0 | GWD/3044 | | |
| **92292667008** | **EQ. BLANK** | EPA 300.0 | GWD/3044 | | |
| **92292667001** | **SW-2** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667002** | **SW-1** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667003** | **BG-1** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667004** | **MW-5** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667005** | **LEACHATE-1** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667006** | **MW-6** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667007** | **AMBIENT BLANK** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667008** | **EQ. BLANK** | EPA 3010A | MPRP/21287 | EPA 6010 | ICP/19151 |
| **92292667001** | **SW-2** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667002** | **SW-1** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667003** | **BG-1** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667004** | **MW-5** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667005** | **LEACHATE-1** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667006** | **MW-6** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667007** | **AMBIENT BLANK** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667008** | **EQ. BLANK** | EPA 3020 | MPRP/62482 | EPA 6020B | ICPM/28879 |
| **92292667001** | **SW-2** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667002** | **SW-1** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667003** | **BG-1** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667004** | **MW-5** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667005** | **LEACHATE-1** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667006** | **MW-6** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667007** | **AMBIENT BLANK** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667008** | **EQ. BLANK** | EPA 7470 | MERP/9220 | EPA 7470 | MERC/8863 |
| **92292667001** | **SW-2** | EPA 8260 | MSV/36305 | | |
| **92292667002** | **SW-1** | EPA 8260 | MSV/36305 | | |
| **92292667003** | **BG-1** | EPA 8260 | MSV/36305 | | |
| **92292667004** | **MW-5** | EPA 8260 | MSV/36304 | | |
| **92292667005** | **LEACHATE-1** | EPA 8260 | MSV/36304 | | |
| **92292667006** | **MW-6** | EPA 8260 | MSV/36304 | | |
| **92292667007** | **AMBIENT BLANK** | EPA 8260 | MSV/36304 | | |
| **92292667008** | **EQ. BLANK** | EPA 8260 | MSV/36304 | | |
| **92292667009** | **TRIP BLANK** | EPA 8260 | MSV/36304 | | |
| **92292667001** | **SW-2** | EPA 903.1 | RADC/29080 | | |
| **92292667002** | **SW-1** | EPA 903.1 | RADC/29080 | | |
| **92292667003** | **BG-1** | EPA 903.1 | RADC/29080 | | |
| **92292667004** | **MW-5** | EPA 903.1 | RADC/29080 | | |
| **92292667005** | **LEACHATE-1** | EPA 903.1 | RADC/29080 | | |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH-BRICKHAVEN
Pace Project No.: 92292667

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92292667006** | **MW-6** | EPA 903.1 | RADC/29080 | | |
| **92292667007** | **AMBIENT BLANK** | EPA 903.1 | RADC/29080 | | |
| **92292667008** | **EQ. BLANK** | EPA 903.1 | RADC/29080 | | |
| **92292667001** | **SW-2** | EPA 904.0 | RADC/29085 | | |
| **92292667002** | **SW-1** | EPA 904.0 | RADC/29085 | | |
| **92292667003** | **BG-1** | EPA 904.0 | RADC/29085 | | |
| **92292667004** | **MW-5** | EPA 904.0 | RADC/29085 | | |
| **92292667005** | **LEACHATE-1** | EPA 904.0 | RADC/29085 | | |
| **92292667006** | **MW-6** | EPA 904.0 | RADC/29085 | | |
| **92292667007** | **AMBIENT BLANK** | EPA 904.0 | RADC/29085 | | |
| **92292667008** | **EQ. BLANK** | EPA 904.0 | RADC/29085 | | |
| **92292667001** | **SW-2** | SM 2540C | WET/44096 | | |
| **92292667002** | **SW-1** | SM 2540C | WET/44096 | | |
| **92292667003** | **BG-1** | SM 2540C | WET/44096 | | |
| **92292667004** | **MW-5** | SM 2540C | WET/44096 | | |
| **92292667005** | **LEACHATE-1** | SM 2540C | WET/44096 | | |
| **92292667006** | **MW-6** | SM 2540C | WET/44096 | | |
| **92292667007** | **AMBIENT BLANK** | SM 2540C | WET/44096 | | |
| **92292667008** | **EQ. BLANK** | SM 2540C | WET/44096 | | |



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Page 2 of 2 for Internal Use ONLY

**Sample Condition Upon Receipt**

**Client Name:** Pace Raleigh Charran-Brickhaven

**Project #:** **WO# : 92292667**

92292667

**Courier:** ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Pace ☐ Other:____

**Custody Seal Present?** ☐ Yes ☑ No **Seals Intact?** ☑ Yes ☐ No

**Date/Initials Person Examining Contents:** 4-6-16 KW

**Packing Material:** ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:____

**Thermometer:** ☑ T1505 ☐ 0.7 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Correction Factor: 0.0°C** **Cooler Temp Corrected (°C):** _____ **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C

**USDA Regulated Soil** ( ☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr.)?** | ☐ Yes | ☑ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? | ☑ Yes | ☐ No | ☐ N/A | 12. |
| -Includes Date/Time/ID/Analysis Matrix: WT | | | | |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐ Yes | ☐ No | ☑ N/A | |
| Samples checked for dechlorination | ☑ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☑ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION**

**Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

**Project Manager SCURF Review:** JG **Date:** 4/6/16

**Project Manager SRF Review:** JG **Date:** 4/7/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1996841

**Section A** Required Client Information:

Company: HDR
Address:
Email To:
Phone: Fax:
Requested Due Date/TAT:

**Section B** Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name: Charah - Brickhaven
Project Number:

**Section C** Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

**SAMPLE ID** (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED Composite Start DATE | COLLECTED Composite Start TIME | COLLECTED Composite End/Grab DATE | COLLECTED Composite End/Grab TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92292667 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SW-2 | | G | 04/05/16 | 0940 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | SW-1 | | | | 1020 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | BG-1 | | | | 1120 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 003 |
| 4 | MW-5 | | | | 1220 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 5 | Leachate-1 | | | | 1410 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 6 | MW-6 | | | | 1615 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 006 |
| 7 | Trip Blank | | | | 0700 | | | | 2 | | | | | | | | | | | 2 | | | | | 009 |
| 8 | Ambient Blank | | | | 1130 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | | 1 | | 007 |
| 9 | EQ. Blank | | | | 1800 | | | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 008 |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 04/05/16 | 1805 | [illegible] | 4/5/16 | 1015 | | | | |
| | [illegible] | 4-6-16 | 12:00 | [illegible] | 4/6/16 | 1200 | 0.7 | Y | N | Y |
| | | | | | | | | | | |
| | | | | | | | | | | |

ORIGINAL

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 04/05/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

May 02, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on April 07, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92292932001** | **MW-7** | Water | 04/06/16 09:55 | 04/07/16 14:27 |
| **92292932002** | **MW-8** | Water | 04/06/16 11:40 | 04/07/16 14:27 |
| **92292932003** | **MW-1** | Water | 04/06/16 13:25 | 04/07/16 14:27 |
| **92292932004** | **MW-1-FD** | Water | 04/06/16 13:45 | 04/07/16 14:27 |
| **92292932005** | **MW-2** | Water | 04/06/16 16:30 | 04/07/16 14:27 |
| **92292932006** | **TRIP BLANK** | Water | 04/06/16 07:00 | 04/07/16 14:27 |
| **92292932007** | **AMBIENT BLANK** | Water | 04/06/16 13:00 | 04/07/16 14:27 |
| **92292932008** | **EQ. BLANK** | Water | 04/06/16 17:00 | 04/07/16 14:27 |



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# SAMPLE ANALYTE COUNT

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92292932001** | **MW-7** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92292932002** | **MW-8** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92292932003** | **MW-1** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92292932004** | **MW-1-FD** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92292932005** | **MW-2** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |



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## SAMPLE ANALYTE COUNT

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292932006** | **TRIP BLANK** | EPA 8260 | CCL | 48 | PASI-C |
| **92292932007** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |
| **92292932008** | **EQ. BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | CCL | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MSH | 1 | PASI-A |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292932001** | **MW-7** | | | | | |
| EPA 300.0 | Chloride | 411 | mg/L | 8.0 | 04/13/16 07:39 | |
| EPA 300.0 | Fluoride | 0.26 | mg/L | 0.10 | 04/12/16 17:22 | |
| EPA 300.0 | Sulfate | 38.0 | mg/L | 1.0 | 04/12/16 17:22 | |
| EPA 6010 | Antimony | 5.5 | ug/L | 5.0 | 04/12/16 16:49 | |
| EPA 6010 | Barium | 208 | ug/L | 5.0 | 04/12/16 16:49 | |
| EPA 6010 | Calcium | 40600 | ug/L | 100 | 04/12/16 16:49 | |
| EPA 6020B | Boron | 32.1 | ug/L | 5.0 | 04/11/16 16:22 | |
| EPA 6020B | Lithium | 20.7 | ug/L | 2.5 | 04/12/16 11:47 | |
| EPA 903.1 | Radium-226 | 0.279 ± 0.337 (0.514) C:NA T:92% | pCi/L | | 04/27/16 19:48 | |
| EPA 904.0 | Radium-228 | 0.188 ± 0.457 (1.01) C:83% T:85% | pCi/L | | 04/27/16 17:15 | |
| SM 2540C | Total Dissolved Solids | 982 | mg/L | 50.0 | 04/08/16 15:59 | |
| **92292932002** | **MW-8** | | | | | |
| EPA 300.0 | Chloride | 685 | mg/L | 8.0 | 04/13/16 09:32 | |
| EPA 300.0 | Sulfate | 5.7 | mg/L | 1.0 | 04/12/16 17:44 | |
| EPA 6010 | Antimony | 8.1 | ug/L | 5.0 | 04/12/16 16:53 | |
| EPA 6010 | Barium | 1220 | ug/L | 5.0 | 04/12/16 16:53 | |
| EPA 6010 | Calcium | 159000 | ug/L | 1000 | 04/13/16 14:13 | |
| EPA 6010 | Zinc | 47.7 | ug/L | 10.0 | 04/12/16 16:53 | |
| EPA 6020B | Boron | 8.9 | ug/L | 5.0 | 04/11/16 16:36 | |
| EPA 6020B | Lithium | 37.6 | ug/L | 2.5 | 04/12/16 12:07 | |
| EPA 903.1 | Radium-226 | 0.730 ± 0.574 (0.797) C:NA T:100% | pCi/L | | 04/27/16 20:25 | |
| EPA 904.0 | Radium-228 | 0.937 ± 0.479 (0.860) C:82% T:84% | pCi/L | | 04/27/16 17:15 | |
| SM 2540C | Total Dissolved Solids | 1130 | mg/L | 250 | 04/08/16 15:59 | |
| **92292932003** | **MW-1** | | | | | |
| EPA 300.0 | Chloride | 342 | mg/L | 7.0 | 04/13/16 08:08 | M6 |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 04/12/16 18:06 | |
| EPA 300.0 | Sulfate | 10.5 | mg/L | 1.0 | 04/12/16 18:06 | |
| EPA 6010 | Barium | 129 | ug/L | 5.0 | 04/12/16 16:56 | |
| EPA 6010 | Calcium | 79900 | ug/L | 100 | 04/12/16 16:56 | |
| EPA 6010 | Zinc | 10.2 | ug/L | 10.0 | 04/12/16 16:56 | |
| EPA 6020B | Boron | 10.6 | ug/L | 5.0 | 04/11/16 16:39 | |
| EPA 6020B | Lithium | 28.4 | ug/L | 2.5 | 04/12/16 12:10 | |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292932003** | **MW-1** | | | | | |
| EPA 903.1 | Radium-226 | 0.141 ± 0.321 (0.517) C:NA T:92% | pCi/L | | 04/27/16 20:12 | |
| EPA 904.0 | Radium-228 | 0.402 ± 0.442 (0.930) C:81% T:89% | pCi/L | | 04/27/16 17:15 | |
| SM 2540C | Total Dissolved Solids | 770 | mg/L | 50.0 | 04/08/16 15:59 | |
| **92292932004** | **MW-1-FD** | | | | | |
| EPA 300.0 | Chloride | 356 | mg/L | 7.0 | 04/13/16 10:00 | |
| EPA 300.0 | Fluoride | 0.13 | mg/L | 0.10 | 04/12/16 19:12 | |
| EPA 300.0 | Sulfate | 10.4 | mg/L | 1.0 | 04/12/16 19:12 | |
| EPA 6010 | Barium | 137 | ug/L | 5.0 | 04/12/16 17:08 | |
| EPA 6010 | Calcium | 83400 | ug/L | 100 | 04/12/16 17:08 | |
| EPA 6020B | Boron | 9.3 | ug/L | 5.0 | 04/11/16 16:42 | |
| EPA 6020B | Lithium | 28.3 | ug/L | 2.5 | 04/12/16 12:13 | |
| EPA 903.1 | Radium-226 | 0.127 ± 0.289 (0.466) C:NA T:96% | pCi/L | | 04/27/16 19:48 | |
| EPA 904.0 | Radium-228 | 0.463 ± 0.471 (0.984) C:80% T:87% | pCi/L | | 04/27/16 17:15 | |
| SM 2540C | Total Dissolved Solids | 754 | mg/L | 50.0 | 04/08/16 16:00 | |
| **92292932005** | **MW-2** | | | | | |
| EPA 300.0 | Chloride | 1230 | mg/L | 20.0 | 04/13/16 13:33 | |
| EPA 300.0 | Fluoride | 0.22 | mg/L | 0.10 | 04/12/16 19:34 | |
| EPA 300.0 | Sulfate | 230 | mg/L | 8.0 | 04/13/16 10:28 | |
| EPA 6010 | Antimony | 10.6 | ug/L | 5.0 | 04/12/16 17:11 | |
| EPA 6010 | Barium | 230 | ug/L | 5.0 | 04/12/16 17:11 | |
| EPA 6010 | Calcium | 192000 | ug/L | 1000 | 04/13/16 14:16 | |
| EPA 6010 | Chromium | 5.7 | ug/L | 5.0 | 04/12/16 17:11 | |
| EPA 6010 | Molybdenum | 9.5 | ug/L | 5.0 | 04/12/16 17:11 | |
| EPA 6010 | Zinc | 113 | ug/L | 10.0 | 04/12/16 17:11 | |
| EPA 6020B | Boron | 47.3 | ug/L | 5.0 | 04/11/16 16:50 | |
| EPA 6020B | Lithium | 117 | ug/L | 2.5 | 04/12/16 12:16 | |
| EPA 903.1 | Radium-226 | 1.94 ± 0.882 (0.896) C:NA T:92% | pCi/L | | 04/27/16 20:12 | |
| EPA 904.0 | Radium-228 | 1.08 ± 0.521 (0.924) C:85% T:82% | pCi/L | | 04/27/16 17:15 | |
| SM 2540C | Total Dissolved Solids | 2700 | mg/L | 250 | 04/11/16 18:33 | |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92292932007** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | -0.137 ± 0.380 (0.898) C:NA T:93% | pCi/L | | 04/27/16 20:00 | |
| EPA 904.0 | Radium-228 | 0.463 ± 0.413 (0.837) C:83% T:76% | pCi/L | | 04/27/16 16:47 | |
| SM 2540C | Total Dissolved Solids | 30.0 | mg/L | 25.0 | 04/11/16 18:33 | |
| **92292932008** | **EQ. BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.000 ± 0.462 (0.959) C:NA T:90% | pCi/L | | 04/27/16 20:36 | |
| EPA 904.0 | Radium-228 | 0.0460 ± 0.286 (0.654) C:85% T:90% | pCi/L | | 04/27/16 16:47 | |
| SM 2540C | Total Dissolved Solids | 38.0 | mg/L | 25.0 | 04/11/16 18:34 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-7** **Lab ID: 92292932001** Collected: 04/06/16 09:55 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **411** | mg/L | 8.0 | 8 | | 04/13/16 07:39 | 16887-00-6 | |
| Fluoride | **0.26** | mg/L | 0.10 | 1 | | 04/12/16 17:22 | 16984-48-8 | |
| Sulfate | **38.0** | mg/L | 1.0 | 1 | | 04/12/16 17:22 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **5.5** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-38-2 | |
| Barium | **208** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-43-9 | |
| Calcium | **40600** | ug/L | 100 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:49 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **32.1** | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:22 | 7440-42-8 | |
| Lithium | **20.7** | ug/L | 2.5 | 5 | 04/11/16 10:25 | 04/12/16 11:47 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:25 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 10:18 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 10:18 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 10:18 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:18 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 10:18 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-7** **Lab ID: 92292932001** Collected: 04/06/16 09:55 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 10:18 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 10:18 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:18 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 10:18 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:18 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 10:18 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/09/16 10:18 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 105 | % | 70-130 | 1 | | 04/09/16 10:18 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 10:18 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **982** | mg/L | 50.0 | 1 | | 04/08/16 15:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-8** **Lab ID: 92292932002** Collected: 04/06/16 11:40 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **685** | mg/L | 8.0 | 8 | | 04/13/16 09:32 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 17:44 | 16984-48-8 | |
| Sulfate | **5.7** | mg/L | 1.0 | 1 | | 04/12/16 17:44 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **8.1** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-38-2 | |
| Barium | **1220** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-43-9 | |
| Calcium | **159000** | ug/L | 1000 | 10 | 04/11/16 12:50 | 04/13/16 14:13 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-62-2 | |
| Zinc | **47.7** | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:53 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **8.9** | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:36 | 7440-42-8 | |
| Lithium | **37.6** | ug/L | 2.5 | 5 | 04/11/16 10:25 | 04/12/16 12:07 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:28 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 10:35 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 10:35 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 10:35 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:35 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 10:35 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-8** **Lab ID: 92292932002** Collected: 04/06/16 11:40 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 10:35 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 10:35 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:35 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 10:35 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:35 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 10:35 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 102 | % | 70-130 | 1 | | 04/09/16 10:35 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 105 | % | 70-130 | 1 | | 04/09/16 10:35 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 04/09/16 10:35 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **1130** | mg/L | 250 | 1 | | 04/08/16 15:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1** **Lab ID: 92292932003** Collected: 04/06/16 13:25 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **342** | mg/L | 7.0 | 7 | | 04/13/16 08:08 | 16887-00-6 | M6 |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 04/12/16 18:06 | 16984-48-8 | |
| Sulfate | **10.5** | mg/L | 1.0 | 1 | | 04/12/16 18:06 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-38-2 | |
| Barium | **129** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-43-9 | |
| Calcium | **79900** | ug/L | 100 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-62-2 | |
| Zinc | **10.2** | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 16:56 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **10.6** | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:39 | 7440-42-8 | |
| Lithium | **28.4** | ug/L | 2.5 | 5 | 04/11/16 10:25 | 04/12/16 12:10 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:35 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 10:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 10:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 10:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 10:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1** **Lab ID: 92292932003** Collected: 04/06/16 13:25 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 10:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 10:52 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 10:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 10:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 10:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 10:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 04/09/16 10:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/09/16 10:52 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 10:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **770** | mg/L | 50.0 | 1 | | 04/08/16 15:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1-FD** **Lab ID: 92292932004** Collected: 04/06/16 13:45 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **356** | mg/L | 7.0 | 7 | | 04/13/16 10:00 | 16887-00-6 | |
| Fluoride | **0.13** | mg/L | 0.10 | 1 | | 04/12/16 19:12 | 16984-48-8 | |
| Sulfate | **10.4** | mg/L | 1.0 | 1 | | 04/12/16 19:12 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-38-2 | |
| Barium | **137** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-43-9 | |
| Calcium | **83400** | ug/L | 100 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:08 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **9.3** | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:42 | 7440-42-8 | |
| Lithium | **28.3** | ug/L | 2.5 | 5 | 04/11/16 10:25 | 04/12/16 12:13 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:37 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 11:10 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 11:10 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 11:10 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 11:10 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 11:10 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1-FD** **Lab ID: 92292932004** Collected: 04/06/16 13:45 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 11:10 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 11:10 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 11:10 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 11:10 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 11:10 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 11:10 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 04/09/16 11:10 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 04/09/16 11:10 | 17060-07-0 | |
| Toluene-d8 (S) | 101 | % | 70-130 | 1 | | 04/09/16 11:10 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **754** | mg/L | 50.0 | 1 | | 04/08/16 16:00 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-2** **Lab ID: 92292932005** Collected: 04/06/16 16:30 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **1230** | mg/L | 20.0 | 20 | | 04/13/16 13:33 | 16887-00-6 | |
| Fluoride | **0.22** | mg/L | 0.10 | 1 | | 04/12/16 19:34 | 16984-48-8 | |
| Sulfate | **230** | mg/L | 8.0 | 8 | | 04/13/16 10:28 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **10.6** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-38-2 | |
| Barium | **230** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-43-9 | |
| Calcium | **192000** | ug/L | 1000 | 10 | 04/11/16 12:50 | 04/13/16 14:16 | 7440-70-2 | |
| Chromium | **5.7** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7439-92-1 | |
| Molybdenum | **9.5** | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-62-2 | |
| Zinc | **113** | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:11 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **47.3** | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:50 | 7440-42-8 | |
| Lithium | **117** | ug/L | 2.5 | 5 | 04/11/16 10:25 | 04/12/16 12:16 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:40 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 06:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 06:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 06:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 06:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 06:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-2** **Lab ID: 92292932005** Collected: 04/06/16 16:30 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 06:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 06:52 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 06:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 06:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 06:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 06:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/09/16 06:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/09/16 06:52 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 06:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2700** | mg/L | 250 | 1 | | 04/11/16 18:33 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: TRIP BLANK** **Lab ID: 92292932006** Collected: 04/06/16 07:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 04:17 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 04:17 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 04:17 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:17 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 04:17 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 04:17 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 04:17 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:17 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 04:17 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:17 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 04:17 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 04/09/16 04:17 | 460-00-4 | |

## REPORT OF LABORATORY ANALYSIS

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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: TRIP BLANK** **Lab ID: 92292932006** Collected: 04/06/16 07:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 101 | % | 70-130 | 1 | | 04/09/16 04:17 | 17060-07-0 | |
| Toluene-d8 (S) | 102 | % | 70-130 | 1 | | 04/09/16 04:17 | 2037-26-5 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: AMBIENT BLANK** **Lab ID: 92292932007** Collected: 04/06/16 13:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 19:56 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 19:56 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 19:56 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:15 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:53 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/11/16 10:25 | 04/12/16 12:19 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 17:20 | 04/13/16 17:42 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 04:52 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 04:52 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 04:52 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:52 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 04:52 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: AMBIENT BLANK** **Lab ID: 92292932007** Collected: 04/06/16 13:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 04:52 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 04:52 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 04:52 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 04:52 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 04:52 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 04:52 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 04/09/16 04:52 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/09/16 04:52 | 17060-07-0 | |
| Toluene-d8 (S) | 103 | % | 70-130 | 1 | | 04/09/16 04:52 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **30.0** | mg/L | 25.0 | 1 | | 04/11/16 18:33 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: EQ. BLANK** **Lab ID: 92292932008** Collected: 04/06/16 17:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 20:18 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 20:18 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 20:18 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 12:50 | 04/12/16 17:18 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/11/16 10:25 | 04/11/16 16:56 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/11/16 10:25 | 04/12/16 12:22 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 18:45 | 04/14/16 16:21 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/09/16 05:09 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/09/16 05:09 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/09/16 05:09 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/09/16 05:09 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/09/16 05:09 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: EQ. BLANK** **Lab ID: 92292932008** Collected: 04/06/16 17:00 Received: 04/07/16 14:27 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/09/16 05:09 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/09/16 05:09 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/09/16 05:09 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/09/16 05:09 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/09/16 05:09 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/09/16 05:09 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 101 | % | 70-130 | 1 | | 04/09/16 05:09 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/09/16 05:09 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 04/09/16 05:09 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **38.0** | mg/L | 25.0 | 1 | | 04/11/16 18:34 | | |



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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: GWD/3044 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

METHOD BLANK: 1707225 — Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 04/12/16 12:14 | |
| Fluoride | mg/L | ND | 0.10 | 04/12/16 12:14 | |
| Sulfate | mg/L | ND | 1.0 | 04/12/16 12:14 | |

LABORATORY CONTROL SAMPLE: 1707226

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 51.7 | 103 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.6 | 104 | 90-110 | |
| Sulfate | mg/L | 50 | 50.1 | 100 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707227 — 1707228

| Parameter | Units | 92292667001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 13.7 | 50 | 50 | 64.2 | 64.7 | 101 | 102 | 90-110 | 1 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.5 | 2.6 | 98 | 99 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 5.5 | 50 | 50 | 55.7 | 56.3 | 100 | 102 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707229 — 1707230

| Parameter | Units | 92292932003 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 342 | 50 | 50 | 384 | 386 | 84 | 89 | 90-110 | 1 | 20 | M6 |
| Fluoride | mg/L | 0.13 | 2.5 | 2.5 | 2.5 | 2.6 | 97 | 99 | 90-110 | 2 | 20 | |
| Sulfate | mg/L | 10.5 | 50 | 50 | 60.3 | 61.3 | 100 | 102 | 90-110 | 2 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MERP/9234 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007

METHOD BLANK: 1706328 Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 04/13/16 16:38 | |

LABORATORY CONTROL SAMPLE: 1706329

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.3 | 90 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1706330 1706331

| Parameter | Units | 92292603002 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.3 | 2.5 | 93 | 98 | 75-125 | 6 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MERP/9235
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Associated Lab Samples: 92292932008

METHOD BLANK: 1706332
Matrix: Water
Associated Lab Samples: 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 04/14/16 16:16 | |

LABORATORY CONTROL SAMPLE: 1706333

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.5 | 100 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1706334 1706335

| Parameter | Units | 92293127001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.4 | 2.4 | 93 | 93 | 75-125 | 0 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MPRP/21308 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

METHOD BLANK: 1705910 | Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Arsenic | ug/L | ND | 10.0 | 04/12/16 16:34 | |
| Barium | ug/L | ND | 5.0 | 04/13/16 14:09 | |
| Beryllium | ug/L | ND | 1.0 | 04/12/16 16:34 | |
| Cadmium | ug/L | ND | 1.0 | 04/12/16 16:34 | |
| Calcium | ug/L | ND | 100 | 04/12/16 16:34 | |
| Chromium | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Cobalt | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Copper | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Lead | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Molybdenum | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Nickel | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Selenium | ug/L | ND | 10.0 | 04/12/16 16:34 | |
| Silver | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Thallium | ug/L | ND | 5.4 | 04/12/16 16:34 | |
| Vanadium | ug/L | ND | 5.0 | 04/12/16 16:34 | |
| Zinc | ug/L | ND | 10.0 | 04/12/16 16:34 | |

LABORATORY CONTROL SAMPLE: 1705911

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 478 | 96 | 80-120 | |
| Arsenic | ug/L | 500 | 464 | 93 | 80-120 | |
| Barium | ug/L | 500 | 474 | 95 | 80-120 | |
| Beryllium | ug/L | 500 | 472 | 94 | 80-120 | |
| Cadmium | ug/L | 500 | 479 | 96 | 80-120 | |
| Calcium | ug/L | 5000 | 4760 | 95 | 80-120 | |
| Chromium | ug/L | 500 | 478 | 96 | 80-120 | |
| Cobalt | ug/L | 500 | 476 | 95 | 80-120 | |
| Copper | ug/L | 500 | 480 | 96 | 80-120 | |
| Lead | ug/L | 500 | 474 | 95 | 80-120 | |
| Molybdenum | ug/L | 500 | 498 | 100 | 80-120 | |
| Nickel | ug/L | 500 | 476 | 95 | 80-120 | |
| Selenium | ug/L | 500 | 476 | 95 | 80-120 | |
| Silver | ug/L | 250 | 242 | 97 | 80-120 | |
| Thallium | ug/L | 500 | 469 | 94 | 80-120 | |
| Vanadium | ug/L | 500 | 479 | 96 | 80-120 | |
| Zinc | ug/L | 500 | 478 | 96 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1705912 1705913

| Parameter | Units | 92292995005 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 414 | 418 | 82 | 83 | 75-125 | 1 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 409 | 416 | 82 | 83 | 75-125 | 2 | 25 | |
| Barium | ug/L | 38.9 | 500 | 500 | 457 | 462 | 84 | 85 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 417 | 421 | 83 | 84 | 75-125 | 1 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 420 | 425 | 84 | 85 | 75-125 | 1 | 25 | |
| Calcium | ug/L | 1980 | 5000 | 5000 | 6120 | 6120 | 83 | 83 | 75-125 | 0 | 25 | |
| Chromium | ug/L | ND | 500 | 500 | 418 | 424 | 83 | 85 | 75-125 | 1 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 414 | 419 | 83 | 84 | 75-125 | 1 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 422 | 428 | 84 | 85 | 75-125 | 1 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 414 | 421 | 82 | 84 | 75-125 | 2 | 25 | |
| Molybdenum | ug/L | ND | 500 | 500 | 434 | 440 | 87 | 88 | 75-125 | 1 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 417 | 421 | 83 | 84 | 75-125 | 1 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 420 | 426 | 84 | 85 | 75-125 | 1 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 215 | 217 | 86 | 87 | 75-125 | 1 | 25 | |
| Thallium | ug/L | ND | 500 | 500 | 413 | 417 | 82 | 83 | 75-125 | 1 | 25 | |
| Vanadium | ug/L | 3.4J | 500 | 500 | 421 | 425 | 84 | 84 | 75-125 | 1 | 25 | |
| Zinc | ug/L | 5.5J | 500 | 500 | 421 | 426 | 83 | 84 | 75-125 | 1 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MPRP/62523 | Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 | Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

METHOD BLANK: 2228577 | Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 04/11/16 16:16 | |
| Lithium | ug/L | ND | 0.50 | 04/12/16 11:42 | |

LABORATORY CONTROL SAMPLE: 2228578

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 83.4 | 104 | 80-120 | |
| Lithium | ug/L | 80 | 88.0 | 110 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2228579 2228580

| Parameter | Units | 92292932001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 32.1 | 80 | 80 | 121 | 118 | 111 | 108 | 75-125 | 2 | 20 | |
| Lithium | ug/L | 20.7 | 80 | 80 | 105 | 102 | 106 | 101 | 75-125 | 4 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MSV/36304 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92292932005, 92292932006, 92292932007, 92292932008

METHOD BLANK: 1705596 Matrix: Water
Associated Lab Samples: 92292932005, 92292932006, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| 2-Hexanone | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| Acetone | ug/L | ND | 25.0 | 04/09/16 03:43 | |
| Acrylonitrile | ug/L | ND | 10.0 | 04/09/16 03:43 | |
| Benzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromochloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromoform | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Bromomethane | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Carbon disulfide | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chlorobenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloroethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloroform | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Chloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Dibromomethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Ethylbenzene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Iodomethane | ug/L | ND | 5.0 | 04/09/16 03:43 | |
| Methylene Chloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Styrene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Toluene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Trichloroethene | ug/L | ND | 1.0 | 04/09/16 03:43 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

METHOD BLANK: 1705596 Matrix: Water
Associated Lab Samples: 92292932005, 92292932006, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Vinyl acetate | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| Vinyl chloride | ug/L | ND | 1.0 | 04/09/16 03:43 | |
| Xylene (Total) | ug/L | ND | 2.0 | 04/09/16 03:43 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 70-130 | 04/09/16 03:43 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 04/09/16 03:43 | |
| Toluene-d8 (S) | % | 100 | 70-130 | 04/09/16 03:43 | |

LABORATORY CONTROL SAMPLE: 1705597

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 49.6 | 99 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 47.8 | 96 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 50.1 | 100 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 46.8 | 94 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 47.0 | 94 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 49.1 | 98 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 49.4 | 99 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 47.5 | 95 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.2 | 88 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 46.6 | 93 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.1 | 96 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 99.8 | 100 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 107 | 107 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 104 | 104 | 72-135 | |
| Acetone | ug/L | 100 | 102 | 102 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 284 | 114 | 40-160 | |
| Benzene | ug/L | 50 | 47.5 | 95 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 45.3 | 91 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 47.0 | 94 | 78-124 | |
| Bromoform | ug/L | 50 | 49.5 | 99 | 71-128 | |
| Bromomethane | ug/L | 50 | 34.2 | 68 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 48.3 | 97 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 47.9 | 96 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 48.2 | 96 | 81-122 | |
| Chloroethane | ug/L | 50 | 43.8 | 88 | 39-148 | |
| Chloroform | ug/L | 50 | 46.3 | 93 | 73-127 | |
| Chloromethane | ug/L | 50 | 44.8 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 46.4 | 93 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 47.7 | 95 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.3 | 101 | 78-125 | |
| Dibromomethane | ug/L | 50 | 45.7 | 91 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 47.9 | 96 | 79-121 | |
| Iodomethane | ug/L | 100 | 84.9 | 85 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

LABORATORY CONTROL SAMPLE: 1705597

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 48.8 | 98 | 64-133 | |
| Styrene | ug/L | 50 | 48.9 | 98 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 47.1 | 94 | 78-122 | |
| Toluene | ug/L | 50 | 46.9 | 94 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 48.1 | 96 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 48.3 | 97 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 49.3 | 99 | 40-160 | |
| Trichloroethene | ug/L | 50 | 46.5 | 93 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 45.0 | 90 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 92.6 | 93 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 49.2 | 98 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 142 | 95 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 98 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1705598

| Parameter | Units | 92292398002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 22.8 | 114 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 24.1 | 120 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 19.5 | 97 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 43.8 | 109 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 44.5 | 111 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 42.3 | 106 | 70-130 | |
| Acetone | ug/L | ND | 40 | 44.4 | 111 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 124 | 124 | 70-130 | |
| Benzene | ug/L | ND | 20 | 22.4 | 112 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.7 | 103 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 23.5 | 118 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 22.3 | 111 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 21.7 | 109 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

MATRIX SPIKE SAMPLE: 1705598

| Parameter | Units | 92292398002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 20.7 | 104 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 20.5 | 102 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 20.4 | 102 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 22.3 | 111 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 44.9 | 112 | 70-130 | |
| Methylene Chloride | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| Styrene | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 21.7 | 109 | 70-130 | |
| Toluene | ug/L | ND | 20 | 22.0 | 110 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 22.1 | 111 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 20.8 | 104 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 19.0 | 95 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 22.0 | 110 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 22.6 | 113 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 32.5 | 81 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 24.2 | 121 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 100 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 102 | 70-130 | |
| Toluene-d8 (S) | % | | | | 98 | 70-130 | |

SAMPLE DUPLICATE: 1705599

| Parameter | Units | 92292398003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

SAMPLE DUPLICATE: 1705599

| Parameter | Units | 92292398003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 100 | 3 | | |
| 4-Bromofluorobenzene (S) | % | 98 | 100 | 2 | | |
| Toluene-d8 (S) | % | 101 | 99 | 2 | | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: MSV/36305 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004

METHOD BLANK: 1705600 Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| 2-Hexanone | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| Acetone | ug/L | ND | 25.0 | 04/09/16 04:00 | |
| Acrylonitrile | ug/L | ND | 10.0 | 04/09/16 04:00 | |
| Benzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromochloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromoform | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Bromomethane | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Carbon disulfide | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chlorobenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloroethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloroform | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Chloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Dibromomethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Ethylbenzene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Iodomethane | ug/L | ND | 5.0 | 04/09/16 04:00 | |
| Methylene Chloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Styrene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Toluene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Trichloroethene | ug/L | ND | 1.0 | 04/09/16 04:00 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

METHOD BLANK: 1705600 Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Vinyl acetate | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| Vinyl chloride | ug/L | ND | 1.0 | 04/09/16 04:00 | |
| Xylene (Total) | ug/L | ND | 2.0 | 04/09/16 04:00 | |
| 1,2-Dichloroethane-d4 (S) | % | 102 | 70-130 | 04/09/16 04:00 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 04/09/16 04:00 | |
| Toluene-d8 (S) | % | 102 | 70-130 | 04/09/16 04:00 | |

LABORATORY CONTROL SAMPLE: 1705601

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 50.9 | 102 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 50.4 | 101 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 50.4 | 101 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 47.3 | 95 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 48.1 | 96 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 51.6 | 103 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 50.5 | 101 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 48.1 | 96 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 44.2 | 88 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 47.7 | 95 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 48.9 | 98 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 98.6 | 99 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 105 | 105 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 103 | 103 | 72-135 | |
| Acetone | ug/L | 100 | 97.1 | 97 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 281 | 112 | 40-160 | |
| Benzene | ug/L | 50 | 49.5 | 99 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 45.5 | 91 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 48.1 | 96 | 78-124 | |
| Bromoform | ug/L | 50 | 48.6 | 97 | 71-128 | |
| Bromomethane | ug/L | 50 | 37.3 | 75 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 51.0 | 102 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 50.2 | 100 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 49.6 | 99 | 81-122 | |
| Chloroethane | ug/L | 50 | 45.3 | 91 | 39-148 | |
| Chloroform | ug/L | 50 | 46.9 | 94 | 73-127 | |
| Chloromethane | ug/L | 50 | 45.2 | 90 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 47.6 | 95 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 49.3 | 99 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 50.4 | 101 | 78-125 | |
| Dibromomethane | ug/L | 50 | 46.6 | 93 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 49.7 | 99 | 79-121 | |
| Iodomethane | ug/L | 100 | 88.6 | 89 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

LABORATORY CONTROL SAMPLE: 1705601

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 49.3 | 99 | 64-133 | |
| Styrene | ug/L | 50 | 50.3 | 101 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 48.9 | 98 | 78-122 | |
| Toluene | ug/L | 50 | 49.1 | 98 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 50.4 | 101 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 48.8 | 98 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 45.9 | 92 | 40-160 | |
| Trichloroethene | ug/L | 50 | 48.6 | 97 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 48.8 | 98 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 91.4 | 91 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 51.8 | 104 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 146 | 97 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 96 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | 99 | 70-130 | |

MATRIX SPIKE SAMPLE: 1705602

| Parameter | Units | 92292290018 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 21.1 | 105 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 22.6 | 113 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 19.9 | 99 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 18.6 | 92 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 40.8 | 102 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 41.3 | 103 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 39.9 | 100 | 70-130 | |
| Acetone | ug/L | ND | 40 | 37.7 | 94 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 115 | 115 | 70-130 | |
| Benzene | ug/L | ND | 20 | 21.3 | 107 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 20.0 | 100 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 19.9 | 99 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 18.6 | 93 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 21.7 | 108 | 70-130 | |
| Carbon disulfide | ug/L | ND | 20 | 22.2 | 111 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.0 | 110 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 20.9 | 105 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 19.8 | 99 | 70-130 | |
| Chloroform | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

MATRIX SPIKE SAMPLE: 1705602

| Parameter | Units | 92292290018 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 20.4 | 102 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 19.7 | 98 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 43.9 | 110 | 70-130 | |
| Methylene Chloride | ug/L | ND | 20 | 20.3 | 101 | 70-130 | |
| Styrene | ug/L | ND | 20 | 20.2 | 101 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.3 | 102 | 70-130 | |
| Toluene | ug/L | ND | 20 | 21.1 | 106 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 21.6 | 108 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 19.6 | 98 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 18.3 | 92 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 20.8 | 104 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 21.3 | 107 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 30.2 | 76 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 22.8 | 114 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 101 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 101 | 70-130 | |
| Toluene-d8 (S) | % | | | | 100 | 70-130 | |

SAMPLE DUPLICATE: 1705603

| Parameter | Units | 92292290019 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

SAMPLE DUPLICATE: 1705603

| Parameter | Units | 92292290019 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 105 | 102 | 3 | | |
| 4-Bromofluorobenzene (S) | % | 100 | 98 | 2 | | |
| Toluene-d8 (S) | % | 103 | 101 | 2 | | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: WET/44122 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004

METHOD BLANK: 1705709 Matrix: Water
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 04/08/16 15:53 | |

LABORATORY CONTROL SAMPLE: 1705710

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 230 | 92 | 90-110 | |

SAMPLE DUPLICATE: 1705711

| Parameter | Units | 92292776003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 280 | 188 | 39 | 5 | D6 |

SAMPLE DUPLICATE: 1705712

| Parameter | Units | 92292780006 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 67.0 | 56.0 | 18 | 5 | D6 |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: WET/44144 — Analysis Method: SM 2540C
QC Batch Method: SM 2540C — Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92292932005, 92292932007, 92292932008

METHOD BLANK: 1706508 — Matrix: Water
Associated Lab Samples: 92292932005, 92292932007, 92292932008

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 04/11/16 18:32 | |

LABORATORY CONTROL SAMPLE: 1706509

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 252 | 101 | 90-110 | |

SAMPLE DUPLICATE: 1706510

| Parameter | Units | 92293144001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | ND | | 5 | |

SAMPLE DUPLICATE: 1706511

| Parameter | Units | 92292585005 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 2120 | 1940 | 9 | 5 | D6 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-7** **Lab ID: 92292932001** Collected: 04/06/16 09:55 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.279 ± 0.337 (0.514)**<br>**C:NA T:92%** | pCi/L | 04/27/16 19:48 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.188 ± 0.457 (1.01)**<br>**C:83% T:85%** | pCi/L | 04/27/16 17:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-8** **Lab ID: 92292932002** Collected: 04/06/16 11:40 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.730 ± 0.574 (0.797)**<br>**C:NA T:100%** | pCi/L | 04/27/16 20:25 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.937 ± 0.479 (0.860)**<br>**C:82% T:84%** | pCi/L | 04/27/16 17:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1** **Lab ID: 92292932003** Collected: 04/06/16 13:25 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.141 ± 0.321 (0.517)**<br>**C:NA T:92%** | pCi/L | 04/27/16 20:12 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.402 ± 0.442 (0.930)**<br>**C:81% T:89%** | pCi/L | 04/27/16 17:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-1-FD** **Lab ID: 92292932004** Collected: 04/06/16 13:45 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.127 ± 0.289 (0.466)**<br>**C:NA T:96%** | pCi/L | 04/27/16 19:48 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.463 ± 0.471 (0.984)**<br>**C:80% T:87%** | pCi/L | 04/27/16 17:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: MW-2** **Lab ID: 92292932005** Collected: 04/06/16 16:30 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **1.94 ± 0.882 (0.896)**<br>**C:NA T:92%** | pCi/L | 04/27/16 20:12 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.08 ± 0.521 (0.924)**<br>**C:85% T:82%** | pCi/L | 04/27/16 17:15 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: AMBIENT BLANK** **Lab ID: 92292932007** Collected: 04/06/16 13:00 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.137 ± 0.380 (0.898) C:NA T:93%** | pCi/L | 04/27/16 20:00 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.463 ± 0.413 (0.837) C:83% T:76%** | pCi/L | 04/27/16 16:47 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

**Sample: EQ. BLANK** **Lab ID: 92292932008** Collected: 04/06/16 17:00 Received: 04/07/16 14:27 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.000 ± 0.462 (0.959) C:NA T:90%** | pCi/L | 04/27/16 20:36 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.0460 ± 0.286 (0.654) C:85% T:90%** | pCi/L | 04/27/16 16:47 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: RADC/29041 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

METHOD BLANK: 1062075 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | -0.137 ± 0.313 (0.737) C:NA T:91% | pCi/L | 04/27/16 19:34 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

QC Batch: RADC/29040 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92292932001, 92292932002, 92292932003, 92292932004, 92292932005, 92292932007, 92292932008

METHOD BLANK: 1062074 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.143 ± 0.276 (0.608) C:87% T:89% | pCi/L | 04/27/16 16:46 | |

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# QUALIFIERS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| D6 | The precision between the sample and sample duplicate exceeded laboratory control limits. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92292932001** | **MW-7** | EPA 300.0 | GWD/3044 | | |
| **92292932002** | **MW-8** | EPA 300.0 | GWD/3044 | | |
| **92292932003** | **MW-1** | EPA 300.0 | GWD/3044 | | |
| **92292932004** | **MW-1-FD** | EPA 300.0 | GWD/3044 | | |
| **92292932005** | **MW-2** | EPA 300.0 | GWD/3044 | | |
| **92292932007** | **AMBIENT BLANK** | EPA 300.0 | GWD/3044 | | |
| **92292932008** | **EQ. BLANK** | EPA 300.0 | GWD/3044 | | |
| **92292932001** | **MW-7** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932002** | **MW-8** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932003** | **MW-1** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932004** | **MW-1-FD** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932005** | **MW-2** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932007** | **AMBIENT BLANK** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932008** | **EQ. BLANK** | EPA 3010A | MPRP/21308 | EPA 6010 | ICP/19171 |
| **92292932001** | **MW-7** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932002** | **MW-8** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932003** | **MW-1** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932004** | **MW-1-FD** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932005** | **MW-2** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932007** | **AMBIENT BLANK** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932008** | **EQ. BLANK** | EPA 3020 | MPRP/62523 | EPA 6020B | ICPM/28877 |
| **92292932001** | **MW-7** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932002** | **MW-8** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932003** | **MW-1** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932004** | **MW-1-FD** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932005** | **MW-2** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932007** | **AMBIENT BLANK** | EPA 7470 | MERP/9234 | EPA 7470 | MERC/8876 |
| **92292932008** | **EQ. BLANK** | EPA 7470 | MERP/9235 | EPA 7470 | MERC/8878 |
| **92292932001** | **MW-7** | EPA 8260 | MSV/36305 | | |
| **92292932002** | **MW-8** | EPA 8260 | MSV/36305 | | |
| **92292932003** | **MW-1** | EPA 8260 | MSV/36305 | | |
| **92292932004** | **MW-1-FD** | EPA 8260 | MSV/36305 | | |
| **92292932005** | **MW-2** | EPA 8260 | MSV/36304 | | |
| **92292932006** | **TRIP BLANK** | EPA 8260 | MSV/36304 | | |
| **92292932007** | **AMBIENT BLANK** | EPA 8260 | MSV/36304 | | |
| **92292932008** | **EQ. BLANK** | EPA 8260 | MSV/36304 | | |
| **92292932001** | **MW-7** | EPA 903.1 | RADC/29041 | | |
| **92292932002** | **MW-8** | EPA 903.1 | RADC/29041 | | |
| **92292932003** | **MW-1** | EPA 903.1 | RADC/29041 | | |
| **92292932004** | **MW-1-FD** | EPA 903.1 | RADC/29041 | | |
| **92292932005** | **MW-2** | EPA 903.1 | RADC/29041 | | |
| **92292932007** | **AMBIENT BLANK** | EPA 903.1 | RADC/29041 | | |
| **92292932008** | **EQ. BLANK** | EPA 903.1 | RADC/29041 | | |
| **92292932001** | **MW-7** | EPA 904.0 | RADC/29040 | | |
| **92292932002** | **MW-8** | EPA 904.0 | RADC/29040 | | |



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(704)875-9092

# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92292932

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92292932003** | **MW-1** | EPA 904.0 | RADC/29040 | | |
| **92292932004** | **MW-1-FD** | EPA 904.0 | RADC/29040 | | |
| **92292932005** | **MW-2** | EPA 904.0 | RADC/29040 | | |
| **92292932007** | **AMBIENT BLANK** | EPA 904.0 | RADC/29040 | | |
| **92292932008** | **EQ. BLANK** | EPA 904.0 | RADC/29040 | | |
| **92292932001** | **MW-7** | SM 2540C | WET/44122 | | |
| **92292932002** | **MW-8** | SM 2540C | WET/44122 | | |
| **92292932003** | **MW-1** | SM 2540C | WET/44122 | | |
| **92292932004** | **MW-1-FD** | SM 2540C | WET/44122 | | |
| **92292932005** | **MW-2** | SM 2540C | WET/44144 | | |
| **92292932007** | **AMBIENT BLANK** | SM 2540C | WET/44144 | | |
| **92292932008** | **EQ. BLANK** | SM 2540C | WET/44144 | | |



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**Sample Condition Upon Receipt**

**Client Name:** HDR - Charrah Brickhaven

**Project** WO#: 92292932

92292932

**Courier:** ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Pace ☐ Other:____

**Custody Seal Present?** ☐ Yes ☑ No **Seals Intact?** ☑ Yes ☐ No

**Date/Initials Person Examining Contents:** 4-7-16 KW

**Packing Material:** ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:____

**Thermometer:** ☑ T1505 ☐ 2.5 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

**Correction Factor: 0.0°C** **Cooler Temp Corrected (°C):** _____ **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C

**USDA Regulated Soil** ( ☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr.)?** | ☐ Yes | ☑ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? | ☑ Yes | ☐ No | ☐ N/A | 12. |
| -Includes Date/Time/ID/Analysis Matrix: WT | | | | |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐ Yes | ☐ No | ☑ N/A | |
| Samples checked for dechlorination | ☑ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☑ No | ☐ N/A | 15. |
| Trip Blank Present? | ☑ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☑ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION**

**Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

**Project Manager SCURF Review:** JY **Date:** 4/7/16

**Project Manager SRF Review:** JY **Date:** 4/8/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1995514

**Section A** Required Client Information:

| | |
|---|---|
| Company: | HDR |
| Address: | |
| | |
| Email To: | |
| Phone: | Fax: |
| Requested Due Date/TAT: | |

**Section B** Required Project Information:

| | |
|---|---|
| Report To: | |
| Copy To: | |
| Purchase Order No.: | |
| Project Name: | Cherokee - Brickhaven |
| Project Number: | |

**Section C** Invoice Information:

| | |
|---|---|
| Attention: | |
| Company Name: | |
| Address: | |
| Pace Quote Reference: | |
| Pace Project Manager: | |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED Composite Start DATE | COLLECTED Composite Start TIME | COLLECTED Composite End/Grab DATE | COLLECTED Composite End/Grab TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92292932 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-7 | | | | | 04/06/16 | 0955 | | 10 | | | | | | | | | 2 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | MW-8 | | | | | | 1140 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | MW-1 | | | | | | 1325 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 003 |
| 4 | MW-1-FD | | | | | | 1345 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 5 | MW-2 | | | | | | 1630 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 6 | Trip Blank | | | | | | 0700 | | 2 | | | | | | | | | | | 2 | | | | | 006 |
| 7 | Ambient Blank | | | | | | 1300 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 007 |
| 8 | EQ. Blank | | | | | | 1700 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 008 |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS |
|---|---|---|---|---|---|---|---|
| | Clint Bonnell / PACE | 04/06/16 | 1405 | [illegible] Pace HCL | 4-7-16 | ~~[illegible]~~ 7-16 | |
| | | | | | | 2:27 | |
| | | | | | | | |
| | | | | | | | |

ORIGINAL

**SAMPLER NAME AND SIGNATURE**

PRINT Name of SAMPLER: Clint Bonnell

SIGNATURE of SAMPLER: Clint Bonnell

DATE Signed (MM/DD/YY): 04/06/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

**Pace Analytical Services, Inc.**
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 19, 2016

Sean Quarry
HDR
440 South Church Street
Suite 1000
Charlotte, NC 28202

RE: Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

Dear Sean Quarry:
Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Mike Plummer, HDR



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Minnesota Certification IDs**

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

**Pennsylvania Certification IDs**

Georgia Certification #: C040
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

**Charlotte Certification IDs**

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12



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# CERTIFICATIONS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Charlotte Certification IDs**
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

**Asheville Certification IDs**
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

**Greenwood Certification IDs**
816 Durst Avenue East, Greenwood, SC 29649
South Carolina Laboratory ID #: 24562
North Carolina Divison of Water Resources Certification number 25
Florida Certification number E87633
Virginia VELAP ID: 460250
Asbestos NVLAP accreditation: 101410-0



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## SAMPLE SUMMARY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **92293140001** | **MW-3** | Water | 04/07/16 10:05 | 04/08/16 16:00 |
| **92293140002** | **MW-4** | Water | 04/07/16 12:55 | 04/08/16 16:00 |
| **92293140003** | **TRIP BLANK** | Water | 04/07/16 07:00 | 04/08/16 16:00 |
| **92293140004** | **AMBIENT BLANK** | Water | 04/07/16 10:30 | 04/08/16 16:00 |
| **92293140005** | **EQ. BLANK** | Water | 04/07/16 12:05 | 04/08/16 16:00 |



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# SAMPLE ANALYTE COUNT

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **92293140001** | **MW-3** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92293140002** | **MW-4** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92293140003** | **TRIP BLANK** | EPA 8260 | NB | 48 | PASI-C |
| **92293140004** | **AMBIENT BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |
| **92293140005** | **EQ. BLANK** | EPA 300.0 | CDC | 3 | PASI-W |
| | | EPA 6010 | CDF | 17 | PASI-A |
| | | EPA 6020B | RJS | 2 | PASI-M |
| | | EPA 7470 | HVK | 1 | PASI-A |
| | | EPA 8260 | NB | 48 | PASI-C |
| | | EPA 903.1 | WRR | 1 | PASI-PA |
| | | EPA 904.0 | JLW | 1 | PASI-PA |
| | | SM 2540C | MJP | 1 | PASI-A |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92293140001** | **MW-3** | | | | | |
| EPA 300.0 | Chloride | 1270 | mg/L | 20.0 | 04/13/16 13:05 | |
| EPA 300.0 | Fluoride | 0.22 | mg/L | 0.10 | 04/12/16 20:40 | |
| EPA 300.0 | Sulfate | 12.9 | mg/L | 1.0 | 04/12/16 20:40 | |
| EPA 6010 | Antimony | 8.7 | ug/L | 5.0 | 04/13/16 19:24 | |
| EPA 6010 | Barium | 578 | ug/L | 5.0 | 04/13/16 19:24 | |
| EPA 6010 | Calcium | 181000 | ug/L | 1000 | 04/14/16 18:32 | |
| EPA 6010 | Molybdenum | 8.6 | ug/L | 5.0 | 04/13/16 19:24 | |
| EPA 6010 | Zinc | 12.5 | ug/L | 10.0 | 04/13/16 19:24 | |
| EPA 6020B | Boron | 42.7 | ug/L | 5.0 | 04/13/16 13:09 | |
| EPA 6020B | Lithium | 217 | ug/L | 0.50 | 04/13/16 13:09 | |
| EPA 903.1 | Radium-226 | 0.605 ± 0.566 (0.802) C:NA T:91% | pCi/L | | 04/18/16 21:40 | |
| EPA 904.0 | Radium-228 | 1.22 ± 0.523 (0.901) C:87% T:88% | pCi/L | | 04/18/16 12:57 | |
| SM 2540C | Total Dissolved Solids | 2530 | mg/L | 250 | 04/12/16 11:59 | |
| **92293140002** | **MW-4** | | | | | |
| EPA 300.0 | Chloride | 174 | mg/L | 4.0 | 04/13/16 11:52 | |
| EPA 300.0 | Fluoride | 0.42 | mg/L | 0.10 | 04/12/16 21:46 | |
| EPA 300.0 | Sulfate | 3.9 | mg/L | 1.0 | 04/12/16 21:46 | |
| EPA 6010 | Barium | 85.9 | ug/L | 5.0 | 04/13/16 19:27 | |
| EPA 6010 | Calcium | 17900 | ug/L | 100 | 04/13/16 19:27 | |
| EPA 6020B | Boron | 6.8 | ug/L | 5.0 | 04/13/16 13:00 | |
| EPA 6020B | Lithium | 18.3 | ug/L | 0.50 | 04/13/16 13:00 | |
| EPA 903.1 | Radium-226 | 0.444 ± 0.463 (0.653) C:NA T:90% | pCi/L | | 04/18/16 22:13 | |
| EPA 904.0 | Radium-228 | 0.0190 ± 0.380 (0.873) C:85% T:77% | pCi/L | | 04/18/16 12:57 | |
| SM 2540C | Total Dissolved Solids | 513 | mg/L | 25.0 | 04/12/16 11:59 | |
| **92293140004** | **AMBIENT BLANK** | | | | | |
| EPA 903.1 | Radium-226 | -0.089 ± 0.406 (0.827) C:NA T:88% | pCi/L | | 04/18/16 21:51 | |
| EPA 904.0 | Radium-228 | 0.375 ± 0.383 (0.797) C:86% T:87% | pCi/L | | 04/18/16 12:57 | |



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## SUMMARY OF DETECTION

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

| Lab Sample ID<br>Method | Client Sample ID<br>Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **92293140005** | **EQ. BLANK** | | | | | |
| EPA 903.1 | Radium-226 | 0.0924 ± 0.422 (0.858) C:NA T:89% | pCi/L | | 04/18/16 22:00 | |
| EPA 904.0 | Radium-228 | 0.360 ± 0.421 (0.892) C:87% T:81% | pCi/L | | 04/18/16 12:57 | |



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(704)875-9092

# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-3** **Lab ID: 92293140001** Collected: 04/07/16 10:05 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **1270** | mg/L | 20.0 | 20 | | 04/13/16 13:05 | 16887-00-6 | |
| Fluoride | **0.22** | mg/L | 0.10 | 1 | | 04/12/16 20:40 | 16984-48-8 | |
| Sulfate | **12.9** | mg/L | 1.0 | 1 | | 04/12/16 20:40 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | **8.7** | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-38-2 | |
| Barium | **578** | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-43-9 | |
| Calcium | **181000** | ug/L | 1000 | 10 | 04/11/16 23:50 | 04/14/16 18:32 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7439-92-1 | |
| Molybdenum | **8.6** | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-62-2 | |
| Zinc | **12.5** | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:24 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **42.7** | ug/L | 5.0 | 1 | 04/12/16 13:22 | 04/13/16 13:09 | 7440-42-8 | |
| Lithium | **217** | ug/L | 0.50 | 1 | 04/12/16 13:22 | 04/13/16 13:09 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 18:45 | 04/14/16 16:56 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/14/16 05:14 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/14/16 05:14 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/14/16 05:14 | 74-83-9 | M1 |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/14/16 05:14 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/14/16 05:14 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-00-3 | M1 |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-3** **Lab ID: 92293140001** Collected: 04/07/16 10:05 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/14/16 05:14 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/14/16 05:14 | 74-88-4 | M1 |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/14/16 05:14 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/14/16 05:14 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:14 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/14/16 05:14 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 99 | % | 70-130 | 1 | | 04/14/16 05:14 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 104 | % | 70-130 | 1 | | 04/14/16 05:14 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 04/14/16 05:14 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **2530** | mg/L | 250 | 1 | | 04/12/16 11:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-4** **Lab ID: 92293140002** Collected: 04/07/16 12:55 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | **174** | mg/L | 4.0 | 4 | | 04/13/16 11:52 | 16887-00-6 | |
| Fluoride | **0.42** | mg/L | 0.10 | 1 | | 04/12/16 21:46 | 16984-48-8 | |
| Sulfate | **3.9** | mg/L | 1.0 | 1 | | 04/12/16 21:46 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-38-2 | |
| Barium | **85.9** | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-43-9 | |
| Calcium | **17900** | ug/L | 100 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:27 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | **6.8** | ug/L | 5.0 | 1 | 04/12/16 13:22 | 04/13/16 13:00 | 7440-42-8 | |
| Lithium | **18.3** | ug/L | 0.50 | 1 | 04/12/16 13:22 | 04/13/16 13:00 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 18:45 | 04/14/16 16:59 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/14/16 05:31 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/14/16 05:31 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/14/16 05:31 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/14/16 05:31 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/14/16 05:31 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-4** **Lab ID: 92293140002** Collected: 04/07/16 12:55 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/14/16 05:31 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/14/16 05:31 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/14/16 05:31 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/14/16 05:31 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 05:31 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/14/16 05:31 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/14/16 05:31 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/14/16 05:31 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 04/14/16 05:31 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | **513** | mg/L | 25.0 | 1 | | 04/12/16 11:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: TRIP BLANK** **Lab ID: 92293140003** Collected: 04/07/16 07:00 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/14/16 06:06 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/14/16 06:06 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/14/16 06:06 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:06 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/14/16 06:06 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 124-48-1 | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/14/16 06:06 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/14/16 06:06 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:06 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/14/16 06:06 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:06 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/14/16 06:06 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 97 | % | 70-130 | 1 | | 04/14/16 06:06 | 460-00-4 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: TRIP BLANK** **Lab ID: 92293140003** Collected: 04/07/16 07:00 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| ***Surrogates*** | | | | | | | | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/14/16 06:06 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 04/14/16 06:06 | 2037-26-5 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: AMBIENT BLANK** **Lab ID: 92293140004** Collected: 04/07/16 10:30 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 22:09 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 22:09 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 22:09 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:30 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/12/16 13:22 | 04/13/16 13:03 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/12/16 13:22 | 04/13/16 13:03 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 18:45 | 04/14/16 17:01 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/14/16 06:23 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/14/16 06:23 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/14/16 06:23 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:23 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/14/16 06:23 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: AMBIENT BLANK** **Lab ID: 92293140004** Collected: 04/07/16 10:30 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/14/16 06:23 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/14/16 06:23 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:23 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/14/16 06:23 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:23 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/14/16 06:23 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 98 | % | 70-130 | 1 | | 04/14/16 06:23 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 102 | % | 70-130 | 1 | | 04/14/16 06:23 | 17060-07-0 | |
| Toluene-d8 (S) | 99 | % | 70-130 | 1 | | 04/14/16 06:23 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 04/12/16 11:59 | | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: EQ. BLANK** **Lab ID: 92293140005** Collected: 04/07/16 12:05 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **3000 IC Anions 28 Days, GWD** | Analytical Method: EPA 300.0 | | | | | | | |
| Chloride | ND | mg/L | 1.0 | 1 | | 04/12/16 22:31 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.10 | 1 | | 04/12/16 22:31 | 16984-48-8 | |
| Sulfate | ND | mg/L | 1.0 | 1 | | 04/12/16 22:31 | 14808-79-8 | |
| **6010 ICP Groundwater** | Analytical Method: EPA 6010 Preparation Method: EPA 3010A | | | | | | | |
| Antimony | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-36-0 | |
| Arsenic | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-38-2 | |
| Barium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-39-3 | |
| Beryllium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-41-7 | |
| Cadmium | ND | ug/L | 1.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-43-9 | |
| Calcium | ND | ug/L | 100 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-70-2 | |
| Chromium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-47-3 | |
| Cobalt | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-48-4 | |
| Copper | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-50-8 | |
| Lead | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7439-92-1 | |
| Molybdenum | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7439-98-7 | |
| Nickel | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-02-0 | |
| Selenium | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7782-49-2 | |
| Silver | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-22-4 | |
| Thallium | ND | ug/L | 5.4 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-28-0 | |
| Vanadium | ND | ug/L | 5.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-62-2 | |
| Zinc | ND | ug/L | 10.0 | 1 | 04/11/16 23:50 | 04/13/16 19:33 | 7440-66-6 | |
| **6020B MET ICPMS** | Analytical Method: EPA 6020B Preparation Method: EPA 3020 | | | | | | | |
| Boron | ND | ug/L | 5.0 | 1 | 04/12/16 13:22 | 04/13/16 13:06 | 7440-42-8 | |
| Lithium | ND | ug/L | 0.50 | 1 | 04/12/16 13:22 | 04/13/16 13:06 | 7439-93-2 | |
| **7470 Mercury** | Analytical Method: EPA 7470 Preparation Method: EPA 7470 | | | | | | | |
| Mercury | ND | ug/L | 0.20 | 1 | 04/11/16 18:45 | 04/14/16 17:04 | 7439-97-6 | |
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Acetone | ND | ug/L | 25.0 | 1 | | 04/14/16 06:40 | 67-64-1 | |
| Acrylonitrile | ND | ug/L | 10.0 | 1 | | 04/14/16 06:40 | 107-13-1 | |
| Benzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 71-43-2 | |
| Bromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 74-97-5 | |
| Bromodichloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-27-4 | |
| Bromoform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-25-2 | |
| Bromomethane | ND | ug/L | 2.0 | 1 | | 04/14/16 06:40 | 74-83-9 | |
| 2-Butanone (MEK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:40 | 78-93-3 | |
| Carbon disulfide | ND | ug/L | 2.0 | 1 | | 04/14/16 06:40 | 75-15-0 | |
| Carbon tetrachloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 56-23-5 | |
| Chlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 108-90-7 | |
| Chloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-00-3 | |
| Chloroform | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 67-66-3 | |
| Chloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 74-87-3 | |
| Dibromochloromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 124-48-1 | |



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# ANALYTICAL RESULTS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: EQ. BLANK** **Lab ID: 92293140005** Collected: 04/07/16 12:05 Received: 04/08/16 16:00 Matrix: Water

| Parameters | Results | Units | Report Limit | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|
| **8260 MSV Low Level Landfill** | Analytical Method: EPA 8260 | | | | | | | |
| Dibromomethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 74-95-3 | |
| 1,2-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 95-50-1 | |
| 1,4-Dichlorobenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 106-46-7 | |
| trans-1,4-Dichloro-2-butene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 110-57-6 | |
| 1,1-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-34-3 | |
| 1,2-Dichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 107-06-2 | |
| 1,1-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-35-4 | |
| cis-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 156-59-2 | |
| trans-1,2-Dichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 156-60-5 | |
| 1,2-Dichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 78-87-5 | |
| cis-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 10061-01-5 | |
| trans-1,3-Dichloropropene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 10061-02-6 | |
| Ethylbenzene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 100-41-4 | |
| 2-Hexanone | ND | ug/L | 5.0 | 1 | | 04/14/16 06:40 | 591-78-6 | |
| Iodomethane | ND | ug/L | 5.0 | 1 | | 04/14/16 06:40 | 74-88-4 | |
| Methylene Chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-09-2 | |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/L | 5.0 | 1 | | 04/14/16 06:40 | 108-10-1 | |
| Styrene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 100-42-5 | |
| 1,1,1,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 630-20-6 | |
| 1,1,2,2-Tetrachloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 79-34-5 | |
| Tetrachloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 127-18-4 | |
| Toluene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 108-88-3 | |
| 1,1,1-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 71-55-6 | |
| 1,1,2-Trichloroethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 79-00-5 | |
| Trichloroethene | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 79-01-6 | |
| Trichlorofluoromethane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-69-4 | |
| 1,2,3-Trichloropropane | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 96-18-4 | |
| Vinyl acetate | ND | ug/L | 2.0 | 1 | | 04/14/16 06:40 | 108-05-4 | |
| Vinyl chloride | ND | ug/L | 1.0 | 1 | | 04/14/16 06:40 | 75-01-4 | |
| Xylene (Total) | ND | ug/L | 2.0 | 1 | | 04/14/16 06:40 | 1330-20-7 | |
| ***Surrogates*** | | | | | | | | |
| 4-Bromofluorobenzene (S) | 100 | % | 70-130 | 1 | | 04/14/16 06:40 | 460-00-4 | |
| 1,2-Dichloroethane-d4 (S) | 103 | % | 70-130 | 1 | | 04/14/16 06:40 | 17060-07-0 | |
| Toluene-d8 (S) | 100 | % | 70-130 | 1 | | 04/14/16 06:40 | 2037-26-5 | |
| **2540C Total Dissolved Solids** | Analytical Method: SM 2540C | | | | | | | |
| Total Dissolved Solids | ND | mg/L | 25.0 | 1 | | 04/12/16 12:00 | | |



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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: GWD/3044 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 3000 IC Anions, GWD
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1707225 — Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Chloride | mg/L | ND | 1.0 | 04/12/16 12:14 | |
| Fluoride | mg/L | ND | 0.10 | 04/12/16 12:14 | |
| Sulfate | mg/L | ND | 1.0 | 04/12/16 12:14 | |

LABORATORY CONTROL SAMPLE: 1707226

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Chloride | mg/L | 50 | 51.7 | 103 | 90-110 | |
| Fluoride | mg/L | 2.5 | 2.6 | 104 | 90-110 | |
| Sulfate | mg/L | 50 | 50.1 | 100 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707227 — 1707228

| Parameter | Units | 92292667001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 13.7 | 50 | 50 | 64.2 | 64.7 | 101 | 102 | 90-110 | 1 | 20 | |
| Fluoride | mg/L | ND | 2.5 | 2.5 | 2.5 | 2.6 | 98 | 99 | 90-110 | 1 | 20 | |
| Sulfate | mg/L | 5.5 | 50 | 50 | 55.7 | 56.3 | 100 | 102 | 90-110 | 1 | 20 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1707229 — 1707230

| Parameter | Units | 92292932003 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 342 | 50 | 50 | 384 | 386 | 84 | 89 | 90-110 | 1 | 20 | M6 |
| Fluoride | mg/L | 0.13 | 2.5 | 2.5 | 2.5 | 2.6 | 97 | 99 | 90-110 | 2 | 20 | |
| Sulfate | mg/L | 10.5 | 50 | 50 | 60.3 | 61.3 | 100 | 102 | 90-110 | 2 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: MERP/9235 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1706332 Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Mercury | ug/L | ND | 0.20 | 04/14/16 16:16 | |

LABORATORY CONTROL SAMPLE: 1706333

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Mercury | ug/L | 2.5 | 2.5 | 100 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1706334 1706335

| Parameter | Units | 92293127001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ug/L | ND | 2.5 | 2.5 | 2.4 | 2.4 | 93 | 93 | 75-125 | 0 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: MPRP/21326 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010A | Analysis Description: 6010 MET NC Groundwater
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1706990 | Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Antimony | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Arsenic | ug/L | ND | 10.0 | 04/13/16 18:20 | |
| Barium | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Beryllium | ug/L | ND | 1.0 | 04/13/16 18:20 | |
| Cadmium | ug/L | ND | 1.0 | 04/13/16 18:20 | |
| Calcium | ug/L | ND | 100 | 04/13/16 18:20 | |
| Chromium | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Cobalt | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Copper | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Lead | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Molybdenum | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Nickel | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Selenium | ug/L | ND | 10.0 | 04/13/16 18:20 | |
| Silver | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Thallium | ug/L | ND | 5.4 | 04/13/16 18:20 | |
| Vanadium | ug/L | ND | 5.0 | 04/13/16 18:20 | |
| Zinc | ug/L | ND | 10.0 | 04/13/16 18:20 | |

LABORATORY CONTROL SAMPLE: 1706991

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Antimony | ug/L | 500 | 454 | 91 | 80-120 | |
| Arsenic | ug/L | 500 | 433 | 87 | 80-120 | |
| Barium | ug/L | 500 | 469 | 94 | 80-120 | |
| Beryllium | ug/L | 500 | 468 | 94 | 80-120 | |
| Cadmium | ug/L | 500 | 459 | 92 | 80-120 | |
| Calcium | ug/L | 5000 | 4670 | 93 | 80-120 | |
| Chromium | ug/L | 500 | 465 | 93 | 80-120 | |
| Cobalt | ug/L | 500 | 449 | 90 | 80-120 | |
| Copper | ug/L | 500 | 461 | 92 | 80-120 | |
| Lead | ug/L | 500 | 450 | 90 | 80-120 | |
| Molybdenum | ug/L | 500 | 476 | 95 | 80-120 | |
| Nickel | ug/L | 500 | 457 | 91 | 80-120 | |
| Selenium | ug/L | 500 | 445 | 89 | 80-120 | |
| Silver | ug/L | 250 | 232 | 93 | 80-120 | |
| Thallium | ug/L | 500 | 459 | 92 | 80-120 | |
| Vanadium | ug/L | 500 | 461 | 92 | 80-120 | |
| Zinc | ug/L | 500 | 445 | 89 | 80-120 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1706992 1706993

| Parameter | Units | 92293126001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | ND | 500 | 500 | 430 | 439 | 86 | 87 | 75-125 | 2 | 25 | |
| Arsenic | ug/L | ND | 500 | 500 | 414 | 423 | 83 | 85 | 75-125 | 2 | 25 | |
| Barium | ug/L | 22.8 | 500 | 500 | 462 | 466 | 88 | 89 | 75-125 | 1 | 25 | |
| Beryllium | ug/L | ND | 500 | 500 | 441 | 446 | 88 | 89 | 75-125 | 1 | 25 | |
| Cadmium | ug/L | ND | 500 | 500 | 430 | 439 | 86 | 88 | 75-125 | 2 | 25 | |
| Calcium | ug/L | 29400 | 5000 | 5000 | 32800 | 33500 | 68 | 82 | 75-125 | 2 | 25 | M1 |
| Chromium | ug/L | ND | 500 | 500 | 435 | 441 | 87 | 88 | 75-125 | 1 | 25 | |
| Cobalt | ug/L | ND | 500 | 500 | 413 | 422 | 83 | 84 | 75-125 | 2 | 25 | |
| Copper | ug/L | ND | 500 | 500 | 431 | 440 | 86 | 88 | 75-125 | 2 | 25 | |
| Lead | ug/L | ND | 500 | 500 | 419 | 427 | 84 | 85 | 75-125 | 2 | 25 | |
| Molybdenum | ug/L | 2.9J | 500 | 500 | 452 | 461 | 90 | 92 | 75-125 | 2 | 25 | |
| Nickel | ug/L | ND | 500 | 500 | 420 | 428 | 84 | 85 | 75-125 | 2 | 25 | |
| Selenium | ug/L | ND | 500 | 500 | 425 | 432 | 85 | 86 | 75-125 | 2 | 25 | |
| Silver | ug/L | ND | 250 | 250 | 219 | 224 | 88 | 90 | 75-125 | 2 | 25 | |
| Thallium | ug/L | ND | 500 | 500 | 425 | 431 | 84 | 86 | 75-125 | 1 | 25 | |
| Vanadium | ug/L | ND | 500 | 500 | 442 | 447 | 88 | 89 | 75-125 | 1 | 25 | |
| Zinc | ug/L | 12.2 | 500 | 500 | 427 | 434 | 83 | 84 | 75-125 | 2 | 25 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: MPRP/62542 Analysis Method: EPA 6020B
QC Batch Method: EPA 3020 Analysis Description: 6020B Water UPD5
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 2229318 Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Boron | ug/L | ND | 5.0 | 04/13/16 12:54 | |
| Lithium | ug/L | ND | 0.50 | 04/13/16 12:54 | |

LABORATORY CONTROL SAMPLE: 2229319

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Boron | ug/L | 80 | 90.3 | 113 | 80-120 | |
| Lithium | ug/L | 80 | 95.3 | 119 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2229320 2229321

| Parameter | Units | 92293140001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ug/L | 42.7 | 80 | 80 | 130 | 129 | 109 | 108 | 75-125 | 1 | 20 | |
| Lithium | ug/L | 217 | 80 | 80 | 293 | 297 | 95 | 100 | 75-125 | 1 | 20 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: MSV/36352 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level Landfill
Associated Lab Samples: 92293140001, 92293140002, 92293140003, 92293140004, 92293140005

METHOD BLANK: 1709167 Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140003, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,1,1-Trichloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,1,2-Trichloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,1-Dichloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,1-Dichloroethene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,2,3-Trichloropropane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,2-Dichlorobenzene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,2-Dichloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,2-Dichloropropane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 1,4-Dichlorobenzene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| 2-Butanone (MEK) | ug/L | ND | 5.0 | 04/14/16 04:57 | |
| 2-Hexanone | ug/L | ND | 5.0 | 04/14/16 04:57 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 5.0 | 04/14/16 04:57 | |
| Acetone | ug/L | ND | 25.0 | 04/14/16 04:57 | |
| Acrylonitrile | ug/L | ND | 10.0 | 04/14/16 04:57 | |
| Benzene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Bromochloromethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Bromodichloromethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Bromoform | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Bromomethane | ug/L | ND | 2.0 | 04/14/16 04:57 | |
| Carbon disulfide | ug/L | ND | 2.0 | 04/14/16 04:57 | |
| Carbon tetrachloride | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Chlorobenzene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Chloroethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Chloroform | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Chloromethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| cis-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| cis-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Dibromochloromethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Dibromomethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Ethylbenzene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Iodomethane | ug/L | ND | 5.0 | 04/14/16 04:57 | |
| Methylene Chloride | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Styrene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Tetrachloroethene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Toluene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| trans-1,2-Dichloroethene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| trans-1,3-Dichloropropene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Trichloroethene | ug/L | ND | 1.0 | 04/14/16 04:57 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

METHOD BLANK: 1709167 Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140003, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Trichlorofluoromethane | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Vinyl acetate | ug/L | ND | 2.0 | 04/14/16 04:57 | |
| Vinyl chloride | ug/L | ND | 1.0 | 04/14/16 04:57 | |
| Xylene (Total) | ug/L | ND | 2.0 | 04/14/16 04:57 | |
| 1,2-Dichloroethane-d4 (S) | % | 101 | 70-130 | 04/14/16 04:57 | |
| 4-Bromofluorobenzene (S) | % | 99 | 70-130 | 04/14/16 04:57 | |
| Toluene-d8 (S) | % | 100 | 70-130 | 04/14/16 04:57 | |

LABORATORY CONTROL SAMPLE: 1709168

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | 50 | 52.8 | 106 | 80-125 | |
| 1,1,1-Trichloroethane | ug/L | 50 | 52.2 | 104 | 71-129 | |
| 1,1,2,2-Tetrachloroethane | ug/L | 50 | 48.8 | 98 | 79-124 | |
| 1,1,2-Trichloroethane | ug/L | 50 | 50.1 | 100 | 85-125 | |
| 1,1-Dichloroethane | ug/L | 50 | 50.3 | 101 | 73-126 | |
| 1,1-Dichloroethene | ug/L | 50 | 53.7 | 107 | 66-135 | |
| 1,2,3-Trichloropropane | ug/L | 50 | 51.9 | 104 | 75-130 | |
| 1,2-Dichlorobenzene | ug/L | 50 | 52.5 | 105 | 80-133 | |
| 1,2-Dichloroethane | ug/L | 50 | 50.0 | 100 | 67-128 | |
| 1,2-Dichloropropane | ug/L | 50 | 50.6 | 101 | 75-132 | |
| 1,4-Dichlorobenzene | ug/L | 50 | 52.5 | 105 | 78-130 | |
| 2-Butanone (MEK) | ug/L | 100 | 97.7 | 98 | 61-144 | |
| 2-Hexanone | ug/L | 100 | 104 | 104 | 68-143 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | 100 | 110 | 110 | 72-135 | |
| Acetone | ug/L | 100 | 101 | 101 | 48-146 | |
| Acrylonitrile | ug/L | 250 | 292 | 117 | 40-160 | |
| Benzene | ug/L | 50 | 51.9 | 104 | 80-125 | |
| Bromochloromethane | ug/L | 50 | 53.1 | 106 | 71-125 | |
| Bromodichloromethane | ug/L | 50 | 53.5 | 107 | 78-124 | |
| Bromoform | ug/L | 50 | 49.9 | 100 | 71-128 | |
| Bromomethane | ug/L | 50 | 39.2 | 78 | 40-160 | |
| Carbon disulfide | ug/L | 50 | 54.8 | 110 | 50-160 | |
| Carbon tetrachloride | ug/L | 50 | 56.1 | 112 | 69-131 | |
| Chlorobenzene | ug/L | 50 | 51.7 | 103 | 81-122 | |
| Chloroethane | ug/L | 50 | 58.6 | 117 | 39-148 | |
| Chloroform | ug/L | 50 | 52.5 | 105 | 73-127 | |
| Chloromethane | ug/L | 50 | 48.0 | 96 | 44-146 | |
| cis-1,2-Dichloroethene | ug/L | 50 | 51.6 | 103 | 74-124 | |
| cis-1,3-Dichloropropene | ug/L | 50 | 50.1 | 100 | 72-132 | |
| Dibromochloromethane | ug/L | 50 | 51.6 | 103 | 78-125 | |
| Dibromomethane | ug/L | 50 | 51.3 | 103 | 82-120 | |
| Ethylbenzene | ug/L | 50 | 52.8 | 106 | 79-121 | |
| Iodomethane | ug/L | 100 | 75.2 | 75 | 39-154 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

LABORATORY CONTROL SAMPLE: 1709168

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Methylene Chloride | ug/L | 50 | 50.3 | 101 | 64-133 | |
| Styrene | ug/L | 50 | 52.2 | 104 | 84-126 | |
| Tetrachloroethene | ug/L | 50 | 51.4 | 103 | 78-122 | |
| Toluene | ug/L | 50 | 53.4 | 107 | 80-121 | |
| trans-1,2-Dichloroethene | ug/L | 50 | 52.2 | 104 | 71-127 | |
| trans-1,3-Dichloropropene | ug/L | 50 | 50.4 | 101 | 69-141 | |
| trans-1,4-Dichloro-2-butene | ug/L | 50 | 45.1 | 90 | 40-160 | |
| Trichloroethene | ug/L | 50 | 50.5 | 101 | 78-122 | |
| Trichlorofluoromethane | ug/L | 50 | 53.3 | 107 | 53-137 | |
| Vinyl acetate | ug/L | 100 | 110 | 110 | 40-160 | |
| Vinyl chloride | ug/L | 50 | 53.1 | 106 | 58-137 | |
| Xylene (Total) | ug/L | 150 | 157 | 104 | 81-126 | |
| 1,2-Dichloroethane-d4 (S) | % | | | 100 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | 100 | 70-130 | |
| Toluene-d8 (S) | % | | | 103 | 70-130 | |

MATRIX SPIKE SAMPLE: 1709169

| Parameter | Units | 92293140001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | 20 | 21.2 | 106 | 70-130 | |
| 1,1,1-Trichloroethane | ug/L | ND | 20 | 22.3 | 112 | 70-130 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | 20 | 19.3 | 96 | 70-130 | |
| 1,1,2-Trichloroethane | ug/L | ND | 20 | 19.9 | 99 | 70-130 | |
| 1,1-Dichloroethane | ug/L | ND | 20 | 21.1 | 106 | 70-130 | |
| 1,1-Dichloroethene | ug/L | ND | 20 | 23.1 | 115 | 70-166 | |
| 1,2,3-Trichloropropane | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| 1,2-Dichlorobenzene | ug/L | ND | 20 | 20.4 | 102 | 70-130 | |
| 1,2-Dichloroethane | ug/L | ND | 20 | 20.9 | 104 | 70-130 | |
| 1,2-Dichloropropane | ug/L | ND | 20 | 21.1 | 106 | 70-130 | |
| 1,4-Dichlorobenzene | ug/L | ND | 20 | 20.6 | 103 | 70-130 | |
| 2-Butanone (MEK) | ug/L | ND | 40 | 42.2 | 105 | 70-130 | |
| 2-Hexanone | ug/L | ND | 40 | 41.9 | 105 | 70-130 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | 40 | 45.7 | 114 | 70-130 | |
| Acetone | ug/L | ND | 40 | 43.9 | 110 | 70-130 | |
| Acrylonitrile | ug/L | ND | 100 | 118 | 118 | 70-130 | |
| Benzene | ug/L | ND | 20 | 22.3 | 111 | 70-148 | |
| Bromochloromethane | ug/L | ND | 20 | 21.5 | 108 | 70-130 | |
| Bromodichloromethane | ug/L | ND | 20 | 21.4 | 107 | 70-130 | |
| Bromoform | ug/L | ND | 20 | 17.9 | 89 | 70-130 | |
| Bromomethane | ug/L | ND | 20 | 11.3 | 56 | 70-130 | M1 |
| Carbon disulfide | ug/L | ND | 20 | 23.8 | 119 | 70-130 | |
| Carbon tetrachloride | ug/L | ND | 20 | 22.8 | 114 | 70-130 | |
| Chlorobenzene | ug/L | ND | 20 | 20.7 | 103 | 70-146 | |
| Chloroethane | ug/L | ND | 20 | 26.2 | 131 | 70-130 | M1 |
| Chloroform | ug/L | ND | 20 | 21.5 | 108 | 70-130 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

MATRIX SPIKE SAMPLE: 1709169

| Parameter | Units | 92293140001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Chloromethane | ug/L | ND | 20 | 19.1 | 95 | 70-130 | |
| cis-1,2-Dichloroethene | ug/L | ND | 20 | 21.7 | 108 | 70-130 | |
| cis-1,3-Dichloropropene | ug/L | ND | 20 | 20.1 | 101 | 70-130 | |
| Dibromochloromethane | ug/L | ND | 20 | 20.1 | 100 | 70-130 | |
| Dibromomethane | ug/L | ND | 20 | 21.8 | 109 | 70-130 | |
| Ethylbenzene | ug/L | ND | 20 | 21.3 | 106 | 70-130 | |
| Iodomethane | ug/L | ND | 40 | 17.6 | 44 | 70-130 | M1 |
| Methylene Chloride | ug/L | ND | 20 | 21.0 | 105 | 70-130 | |
| Styrene | ug/L | ND | 20 | 20.7 | 103 | 70-130 | |
| Tetrachloroethene | ug/L | ND | 20 | 20.1 | 100 | 70-130 | |
| Toluene | ug/L | ND | 20 | 22.1 | 110 | 70-155 | |
| trans-1,2-Dichloroethene | ug/L | ND | 20 | 22.3 | 111 | 70-130 | |
| trans-1,3-Dichloropropene | ug/L | ND | 20 | 19.4 | 97 | 70-130 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | 20 | 14.5 | 73 | 70-130 | |
| Trichloroethene | ug/L | ND | 20 | 21.9 | 109 | 69-151 | |
| Trichlorofluoromethane | ug/L | ND | 20 | 25.0 | 125 | 70-130 | |
| Vinyl acetate | ug/L | ND | 40 | 30.3 | 76 | 70-130 | |
| Vinyl chloride | ug/L | ND | 20 | 24.5 | 123 | 70-130 | |
| 1,2-Dichloroethane-d4 (S) | % | | | | 103 | 70-130 | |
| 4-Bromofluorobenzene (S) | % | | | | 97 | 70-130 | |
| Toluene-d8 (S) | % | | | | 102 | 70-130 | |

SAMPLE DUPLICATE: 1709170

| Parameter | Units | 92293140002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,1-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2,2-Tetrachloroethane | ug/L | ND | ND | | 30 | |
| 1,1,2-Trichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,1-Dichloroethene | ug/L | ND | ND | | 30 | |
| 1,2,3-Trichloropropane | ug/L | ND | ND | | 30 | |
| 1,2-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane | ug/L | ND | ND | | 30 | |
| 1,2-Dichloropropane | ug/L | ND | ND | | 30 | |
| 1,4-Dichlorobenzene | ug/L | ND | ND | | 30 | |
| 2-Butanone (MEK) | ug/L | ND | ND | | 30 | |
| 2-Hexanone | ug/L | ND | ND | | 30 | |
| 4-Methyl-2-pentanone (MIBK) | ug/L | ND | ND | | 30 | |
| Acetone | ug/L | ND | ND | | 30 | |
| Acrylonitrile | ug/L | ND | ND | | 30 | |
| Benzene | ug/L | ND | ND | | 30 | |
| Bromochloromethane | ug/L | ND | ND | | 30 | |
| Bromodichloromethane | ug/L | ND | ND | | 30 | |
| Bromoform | ug/L | ND | ND | | 30 | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

SAMPLE DUPLICATE: 1709170

| Parameter | Units | 92293140002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Bromomethane | ug/L | ND | ND | | 30 | |
| Carbon disulfide | ug/L | ND | ND | | 30 | |
| Carbon tetrachloride | ug/L | ND | ND | | 30 | |
| Chlorobenzene | ug/L | ND | ND | | 30 | |
| Chloroethane | ug/L | ND | ND | | 30 | |
| Chloroform | ug/L | ND | ND | | 30 | |
| Chloromethane | ug/L | ND | ND | | 30 | |
| cis-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| cis-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| Dibromochloromethane | ug/L | ND | ND | | 30 | |
| Dibromomethane | ug/L | ND | ND | | 30 | |
| Ethylbenzene | ug/L | ND | ND | | 30 | |
| Iodomethane | ug/L | ND | ND | | 30 | |
| Methylene Chloride | ug/L | ND | ND | | 30 | |
| Styrene | ug/L | ND | ND | | 30 | |
| Tetrachloroethene | ug/L | ND | ND | | 30 | |
| Toluene | ug/L | ND | ND | | 30 | |
| trans-1,2-Dichloroethene | ug/L | ND | ND | | 30 | |
| trans-1,3-Dichloropropene | ug/L | ND | ND | | 30 | |
| trans-1,4-Dichloro-2-butene | ug/L | ND | ND | | 30 | |
| Trichloroethene | ug/L | ND | ND | | 30 | |
| Trichlorofluoromethane | ug/L | ND | ND | | 30 | |
| Vinyl acetate | ug/L | ND | ND | | 30 | |
| Vinyl chloride | ug/L | ND | ND | | 30 | |
| Xylene (Total) | ug/L | ND | ND | | 30 | |
| 1,2-Dichloroethane-d4 (S) | % | 103 | 101 | 2 | | |
| 4-Bromofluorobenzene (S) | % | 98 | 96 | 2 | | |
| Toluene-d8 (S) | % | 99 | 99 | 0 | | |

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# QUALITY CONTROL DATA

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: WET/44164 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1707332 | Matrix: Water
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | 25.0 | 04/12/16 11:56 | |

LABORATORY CONTROL SAMPLE: 1707333

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 250 | 236 | 94 | 90-110 | |

SAMPLE DUPLICATE: 1707334

| Parameter | Units | 92293023011 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 1080 | 1090 | 1 | 5 | |

SAMPLE DUPLICATE: 1707335

| Parameter | Units | 92293168003 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | ND | ND | | 5 | |

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## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-3** **Lab ID: 92293140001** Collected: 04/07/16 10:05 Received: 04/08/16 16:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.605 ± 0.566 (0.802)**<br>**C:NA T:91%** | pCi/L | 04/18/16 21:40 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **1.22 ± 0.523 (0.901)**<br>**C:87% T:88%** | pCi/L | 04/18/16 12:57 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: MW-4** **Lab ID: 92293140002** Collected: 04/07/16 12:55 Received: 04/08/16 16:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.444 ± 0.463 (0.653)**<br>**C:NA T:90%** | pCi/L | 04/18/16 22:13 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.0190 ± 0.380 (0.873)**<br>**C:85% T:77%** | pCi/L | 04/18/16 12:57 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: AMBIENT BLANK** **Lab ID: 92293140004** Collected: 04/07/16 10:30 Received: 04/08/16 16:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **-0.089 ± 0.406 (0.827) C:NA T:88%** | pCi/L | 04/18/16 21:51 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.375 ± 0.383 (0.797) C:86% T:87%** | pCi/L | 04/18/16 12:57 | 15262-20-1 | |



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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

**Sample: EQ. BLANK** **Lab ID: 92293140005** Collected: 04/07/16 12:05 Received: 04/08/16 16:00 Matrix: Water
PWS: Site ID: Sample Type:

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 903.1 | **0.0924 ± 0.422 (0.858) C:NA T:89%** | pCi/L | 04/18/16 22:00 | 13982-63-3 | |
| Radium-228 | EPA 904.0 | **0.360 ± 0.421 (0.892) C:87% T:81%** | pCi/L | 04/18/16 12:57 | 15262-20-1 | |



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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: RADC/28903 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1058304 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.0862 ± 0.394 (0.234) C:NA T:96% | pCi/L | 04/18/16 13:37 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

QC Batch: RADC/28911 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 92293140001, 92293140002, 92293140004, 92293140005

METHOD BLANK: 1058312 Matrix: Water
Associated Lab Samples:

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-228 | 0.391 ± 0.351 (0.711) C:90% T:74% | pCi/L | 04/18/16 13:00 | |

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# QUALIFIERS

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-A | Pace Analytical Services - Asheville |
| PASI-C | Pace Analytical Services - Charlotte |
| PASI-M | Pace Analytical Services - Minneapolis |
| PASI-PA | Pace Analytical Services - Greensburg |
| PASI-W | Pace Analytical Services - Greenwood |

## ANALYTE QUALIFIERS

| | |
|---|---|
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M6 | Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution. |



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# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CHARAH - BRICKHAVEN
Pace Project No.: 92293140

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **92293140001** | **MW-3** | EPA 300.0 | GWD/3044 | | |
| **92293140002** | **MW-4** | EPA 300.0 | GWD/3044 | | |
| **92293140004** | **AMBIENT BLANK** | EPA 300.0 | GWD/3044 | | |
| **92293140005** | **EQ. BLANK** | EPA 300.0 | GWD/3044 | | |
| **92293140001** | **MW-3** | EPA 3010A | MPRP/21326 | EPA 6010 | ICP/19164 |
| **92293140002** | **MW-4** | EPA 3010A | MPRP/21326 | EPA 6010 | ICP/19164 |
| **92293140004** | **AMBIENT BLANK** | EPA 3010A | MPRP/21326 | EPA 6010 | ICP/19164 |
| **92293140005** | **EQ. BLANK** | EPA 3010A | MPRP/21326 | EPA 6010 | ICP/19164 |
| **92293140001** | **MW-3** | EPA 3020 | MPRP/62542 | EPA 6020B | ICPM/28912 |
| **92293140002** | **MW-4** | EPA 3020 | MPRP/62542 | EPA 6020B | ICPM/28912 |
| **92293140004** | **AMBIENT BLANK** | EPA 3020 | MPRP/62542 | EPA 6020B | ICPM/28912 |
| **92293140005** | **EQ. BLANK** | EPA 3020 | MPRP/62542 | EPA 6020B | ICPM/28912 |
| **92293140001** | **MW-3** | EPA 7470 | MERP/9235 | EPA 7470 | MERC/8878 |
| **92293140002** | **MW-4** | EPA 7470 | MERP/9235 | EPA 7470 | MERC/8878 |
| **92293140004** | **AMBIENT BLANK** | EPA 7470 | MERP/9235 | EPA 7470 | MERC/8878 |
| **92293140005** | **EQ. BLANK** | EPA 7470 | MERP/9235 | EPA 7470 | MERC/8878 |
| **92293140001** | **MW-3** | EPA 8260 | MSV/36352 | | |
| **92293140002** | **MW-4** | EPA 8260 | MSV/36352 | | |
| **92293140003** | **TRIP BLANK** | EPA 8260 | MSV/36352 | | |
| **92293140004** | **AMBIENT BLANK** | EPA 8260 | MSV/36352 | | |
| **92293140005** | **EQ. BLANK** | EPA 8260 | MSV/36352 | | |
| **92293140001** | **MW-3** | EPA 903.1 | RADC/28903 | | |
| **92293140002** | **MW-4** | EPA 903.1 | RADC/28903 | | |
| **92293140004** | **AMBIENT BLANK** | EPA 903.1 | RADC/28903 | | |
| **92293140005** | **EQ. BLANK** | EPA 903.1 | RADC/28903 | | |
| **92293140001** | **MW-3** | EPA 904.0 | RADC/28911 | | |
| **92293140002** | **MW-4** | EPA 904.0 | RADC/28911 | | |
| **92293140004** | **AMBIENT BLANK** | EPA 904.0 | RADC/28911 | | |
| **92293140005** | **EQ. BLANK** | EPA 904.0 | RADC/28911 | | |
| **92293140001** | **MW-3** | SM 2540C | WET/44164 | | |
| **92293140002** | **MW-4** | SM 2540C | WET/44164 | | |
| **92293140004** | **AMBIENT BLANK** | SM 2540C | WET/44164 | | |
| **92293140005** | **EQ. BLANK** | SM 2540C | WET/44164 | | |



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Page 2 of 2 for Internal Use ONLY

**Sample Condition Upon Receipt**

**Client Name:** HDR

**Proje** WO# : 92293140

92293140

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:____

**Custody Seal Present?** ☐ Yes ☐ No **Seals Intact?** ☐ Yes ☐ No

**Date/Initials Person Examining Contents:** DMS 4/7

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other:____

**Thermometer:** ☐ T1505 ☐ ____ **Type of Ice:** ☐ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

**Correction Factor: 0.0°C** **Cooler Temp Corrected (°C):** 2.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C

**USDA Regulated Soil** ( ☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

| | | | | COMMENTS: |
|---|---|---|---|---|
| Chain of Custody Present? | ☐ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☐ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☐ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☐ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☐ Yes | ☐ No | ☐ N/A | 5. |
| **Short Hold Time Analysis (<72 hr.)?** | ☐ Yes | ☐ No | ☐ N/A | 6. |
| **Rush Turn Around Time Requested?** | ☐ Yes | ☐ No | ☐ N/A | 7. |
| Sufficient Volume? | ☐ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☐ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☐ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☐ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☐ N/A | 11. Note if sediment is visible in the dissolved container |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT | ☐ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☐ Yes | ☐ No | ☐ N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☐ Yes | ☐ No | ☐ N/A | |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg | ☐ Yes | ☐ No | ☐ N/A | |
| Samples checked for dechlorination | ☐ Yes | ☐ No | ☐ N/A | 14. |
| Headspace in VOA Vials (>5-6mm)? | ☐ Yes | ☐ No | ☐ N/A | 15. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☐ N/A | 16. |
| Trip Blank Custody Seals Present? | ☐ Yes | ☐ No | ☐ N/A | |
| Pace Trip Blank Lot # (if purchased):____ | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐ Yes ☐ No

Person Contacted: ____ Date/Time: ____

Comments/Resolution: ____

**Project Manager SCURF Review:** MS **Date:** 4/8/16

**Project Manager SRF Review:** VJ **Date:** 4/11/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1995516

**Section A** Required Client Information:

Company: HDR
Address:
Email To:
Phone: Fax:
Requested Due Date/TAT:

**Section B** Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name: Church - Brickhaven
Project Number:

**Section C** Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

**REGULATORY AGENCY**

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

**Section D** Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test (Y/N): Radium 226/228 | metals | 8260 | TDS | Fluoride | Chloride/Sulfate | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. 92293140 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-3 | | G | | | 04/07/16 | 1005 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 001 |
| 2 | MW-4 | | | | | | 1255 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 002 |
| 3 | Trip Blank | | | | | | 0700 | | 2 | | | | | | | | | | | 2 | | | | | 003 |
| 4 | Ambient Blank | | | | | | 1030 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 004 |
| 5 | EQ. Blank | | | | | | 1205 | | 11 | | | | | | | | | 3 | 2 | 3 | 1 | 1 | 1 | | 005 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Clint Sorrell / PACE | 04/07/16 | 1600 | Jamie Price / HDR | 4/7 | 1600 | 2.5 | 4 | N | N |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Clint Sorrell

SIGNATURE of SAMPLER: Clint Sorrell

DATE Signed (MM/DD/YY): 04/07/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

# C

# Appendix C – 4th, 5th, & 6th Round Electronic Data Deliverables

440 S Church Street, Suite 1000
Charlotte, NC  28202-2075
704.338.6700

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