

**SRP Underground Cable
Flowable Thermal Fill (FTB) Areas of Concern
Summary of Assessment and Corrective Actions
June 5, 2020**

This document summarizes Eversource’s assessment and corrective actions for two locations identified along the project route where the SRP underground duct bank and/or flowable thermal back fill (FTB) appear to have altered preconstruction drainage patterns and where leaching of compounds associated with the cement portion of the flowable fill is occurring.

29 Gundalow Landing, Newington

Gundalow Landing Assessment

Following construction of the underground cable duct bank on the 29 Gundalow Landing property in the Fall of 2019, seepage and whitish material began accumulating in the vicinity of a drainage culvert that ultimately leads to Little Bay. The concrete cable duct bank is located between approximately 3 to 4 feet below grade at this location. Shovel test holes in the area indicate that the FTB (aggregate mixed with cement) is present above the duct bank to approximately 1 foot below grade.

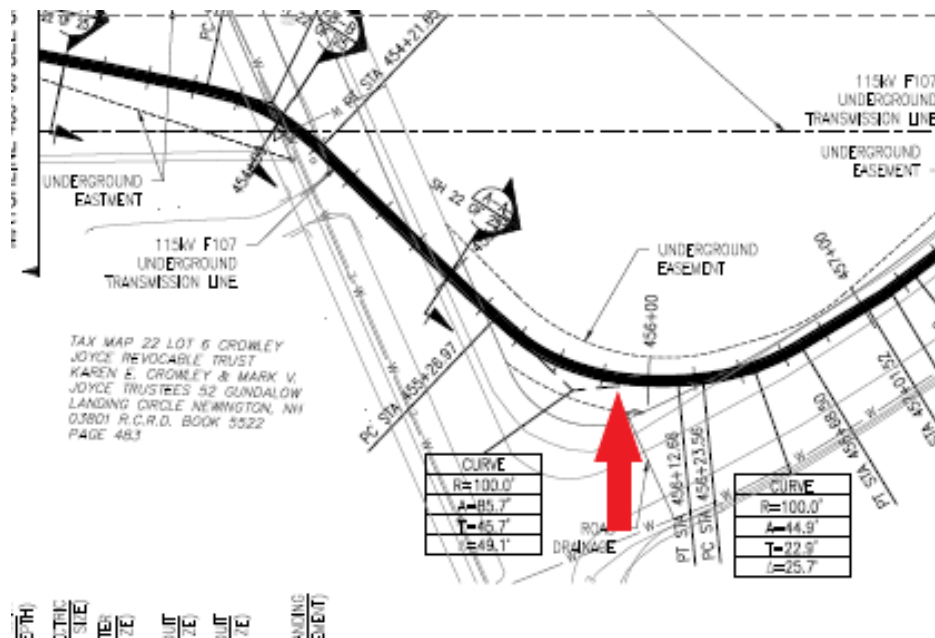


Figure 1: Plan view of underground cable – Veitas property

Eversource visually observed the area periodically in the spring of 2020 and has determined that the duct bank and/or FTB above the duct bank have altered the shallow groundwater drainage in this area causing groundwater seepage to breakout at the ground surface. Soils in this area are generally comprised of tight silt and clay with low transmissivity. There is a 6 to 8 inch layer of loam above the clay soils.

On May 6, 2020 Eversource and GZA investigated the white precipitate that had accumulated on the sod in this area to confirm that it was associated with the flowable fill above the duct bank. The area where precipitate accumulated was approximately 20 feet long by as much as 10 feet wide.



Photograph 1: Precipitate observed on ground surface at 29 Gundalow Landing property on May 5, 2020

A sample of the precipitate was collected and analyzed at ESS Laboratory of Cranston, RI via two laboratory methods. The targeted elements were based on the technical information provided from the flowable fill supplier, InTerra Innovation, Inc. of Reading, MA. The chemical components of the portland cement used in the FTB provided in the material safety data sheet (MSDS) provided by InTerra are listed below.

Section 3 – Composition/Information on Ingredients		
Component/Ingredient	CAS #	Percent Present (Range)
Portland cement	65997-15-1	100
Tricalcium silicate	12168-85-3	20 - 70
Dicalcium silicate	10034-77-2	10 - 60
Tetracalcium aluminoferrite	12068-35-8	5 - 15
Gypsum (Calcium Sulfate)	13397-24-5	2 - 10
Tri-calcium Aluminate	12042-78-3	1 - 15
Limestone (Calcium Carbonate)	1317-65-3	0 - 20
Magnesium oxide	1309-48-4	< 1 - 4
Nuisance Dusts (Particulates not otherwise regulated)	None	< 1 - 5
Crystalline Silica (Quartz)	14808-60-7	0 - < 1

Other Components

Cement is made from materials mined from the earth and processed using energy provided by fuels. Additional materials, such as fly ash, kiln dust and slag may also be introduced into the cement manufacturing process. A chemical analysis of cement may reveal trace amounts of naturally occurring but potentially harmful chemical compounds such as free crystalline silica, organic compounds, potassium and sodium compounds, heavy metals including cadmium, chromium (including hexavalent chromium), nickel and lead. Other trace constituents may include calcium oxide (also known as free lime or quick lime) and organic compounds from grinding aids such as amine acetate salts, glycols and 1,2-ethanediol.

ESS Laboratory report 20E0229 utilized US EPA SW-846 for metals analysis and detected aluminum (0.152%), calcium (21%), iron (0.186%), and magnesium (0.173%). The remaining 78% was not identified by this method. Report 71200078 utilized Scanning Electron Microscope technology and determined that the material consisted primarily of calcium, oxygen, and carbon, with lesser amounts of sodium, aluminum, silicon, chlorine, potassium, magnesium and iron. The report concluded that the results are consistent with the constituents of cement. The laboratory reports are provided in Appendix A.

To assess water quality of the seepage, GZA also collected two water samples for pH analysis on May 6, 2020. These samples were analyzed at Alpha Laboratory in Westborough, MA. The laboratory report is also provided in Appendix A. The first sample (29 Gundalow-050620-1) was taken from surficial water near the precipitate deposits. It had a pH of 12.4. The second sample (29 Gundalow-050620-2) was obtained from a small hand dug test pit adjacent to the precipitate area where perched groundwater was observed at approximately 4 inches below the ground surface. The pH of this sample was 7.9.

Based on the elevated pH observed in the first seepage sample and the chemical analysis conducted, it is evident that the white precipitate is primarily calcium carbonate (CaCO₃) or lime. These lab results and pH observations confirm that the white precipitate material is directly attributable to the FTB leaching into shallow/runoff groundwater.

The sod impacted with the white precipitate was removed on May 6, 2020 and black filter fabric was placed on the bare soils in this area to assess whether the precipitate was continuing to accumulate in this area.

Eversource and GZA conducted visual observations of the area and observed that some minor amounts of white precipitate have collected on the filter fabric following removal of the impacted sod.



Photograph 2: Precipitate accumulating on filter fabric May 20, 2020

Based on the high pH observed in the seepage water, Eversource and GZA field monitored the seepage pH using a properly calibrated pH meter at the Gundalow Landing culvert inlet at the 29 Gundalow Landing property, the Gundalow Landing culvert outlet which is approximately 50' from the area of concern and the Brickyard Circle culvert outlet which is approximately 100' from the area of concern at the locations shown in the figure below. Monitoring was conducted on May 18, 19, 20, and 30, 2020.



Figure 2: pH monitoring locations Gundalow Landing and Brickyard Circle

The drainage course in the area monitored consists of a narrow drainage channel at the Gundalow culvert outlet. The drainage course at the Brickyard Circle culvert outlet is a grassed area bound by field stone walls. (See photographs 3 and 4 below). The downstream sample locations have been at pockets of standing water. There was no continuous flow observed during the monitoring events. While the drainage course ultimately interfaces with Little Bay approximately 400' from the Brickyard Circle culvert outlet, Eversource has not identified any releases of water with elevated pH to Little Bay.



Photograph 3: Drainage Course at Gundalow Landing Culvert Outlet (View facing southwest)



Photograph 4: Drainage course south of Brickyard Circle (facing south)

The pH monitoring data collected in the Gundalow Landing area to date are summarized below:

Table 1: pH Monitoring Data in Gundalow Landing/Brickyard Circle Drainage Course

Monitoring Location	pH Field Monitoring Event			
	05/18/2020	05/19/2020	05/20/2020	5/30/2020
Gundalow Landing Culvert Inlet	12.1	12.5	12.1	11.4*
Gundalow Landing Culvert Outlet	10.7	10.6	9.0	8.2
Brickyard Circle Culvert Outlet	8.8	7.1	6.7	6.7

*Pooled water in front of culvert inlet. Culvert dry.

The pH data show that the pH levels decrease with increasing distance from the 29 Gundalow Landing property and that the pH levels at the two downstream monitoring locations are decreasing over time. Elevated pH levels are consistently observed at the Gundalow Landing culvert inlet.

Gundalow Landing Corrective Actions

As discussed, the duct bank and flowable fill appear to have altered the normal subsurface shallow groundwater flow patterns, causing water to seep to the ground surface. To mitigate this condition, on May 26, 2020 Eversource excavated approximately 1.5 feet of flowable fill above the duct bank along with the tight silt and clay soils in the seepage area, in an area that measured approximately 24 feet long by 20 feet wide at its widest point. Prior to the excavation, surface seepage in the culvert was recovered and due to the elevated observed pH, will be properly disposed of at a water treatment facility. A perforated subdrain wrapped in filter fabric that outlets to the culvert was installed in the center of the excavation.

Filter fabric and stone were installed near the culvert inlet. The rest of the excavation was backfilled with approximately 18 inches of permeable sand and gravel.



Photograph 5: Excavation of 29 Gundalow Landing Seepage Area in progress

On June 2, 2020, the drainage course and grades at the Gundalow Landing culvert outlet were improved to prevent the current condition of damming of water downstream of the culvert.



Photograph 6: Drainage course improvement at Gundalow Landing Culvert Outlet (View facing northeast)

During and following the excavation on the 29 Gundalow Landing property it was observed that seepage is preferentially flowing in the flowable fill layer. Minor seepage was observed during the excavation on May 26, 2020. In the days following, seepage has been observed at the surface of the sand and gravel layer, however, little or no flow has been observed discharging to the culvert.



Photograph 7: View of Gundalow Landing seepage area following excavation and backfill with sand and gravel

pH of the seepage in this area and the downstream drainage course will be monitored closely in accordance with The FTB Monitoring Plan prepared by GZA and submitted to the Department concurrently with this Report. If elevated pH readings persist additional assessment/corrective actions will be implemented.

UNH – Waterworks Road Durham

UNH Assessment

In April of 2020 University of New Hampshire of Durham (UNH) staff alerted Eversource that groundwater was seeping to the ground surface in a grassed area and along the edge of Waterworks Road and a paved access road for the Greggs Hall parking lot. The underground cable duct bank runs in a north/south orientation through this area. According to as built plans, the depth of the duct bank in this area ranges between 2.5 feet and 7 feet below grade. Flowable fill is present above the duct bank to a depth of approximately 6 inches below the ground surface. UNH tested the seepage and confirmed that the source of water was not the water main located in the area.

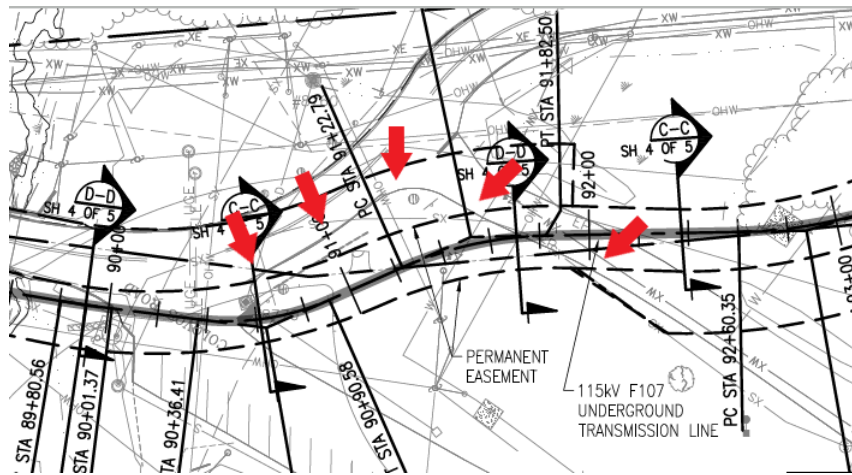


Figure 3: Duct bank plan view where seepage was observed on the Greggs Hall access Road and Waterworks Road

On May 6, 2020 Eversource and GZA investigated the seepage. Water was observed emanating from the edge of the Greggs Hall access road. The water seeped along the pavement towards Waterworks Road. Iron staining was observed in the seepage course along the Greggs Hall access road and Waterworks Road.

In addition, white precipitate, similar to what was observed at the Gundalow Landing property was observed along the grassed slope on the south side of the Greggs Hall access Road and within standing water of a wetland complex. Based on the analysis conducted at Gundalow Landing, this material is also assumed to be primarily calcium carbonate (CaCO_3).

It was assessed that the groundwater that normally flows eastward was being impeded by the duct bank and/or flowable fill and breaking out at the ground surface.



Photograph 8: Seepage observed on the Greggs Hall access road and Waterworks Road May 6, 2020



Photograph 9: Precipitate observed south of the Greggs Hall access road

On May 15, 2020, to assess potential water quality issues, GZA monitored pH at several locations. Site details and sample/monitoring locations are shown in Figure 6 below. pH was field monitored at the Swale-1 location, where iron precipitate was observed, in standing water at the Wetland-1/Wetland-2 locations, at the College Brook-1/College Brook-2 locations and at the CB-2 drain outfall location. The data are provided in Table 2 below.

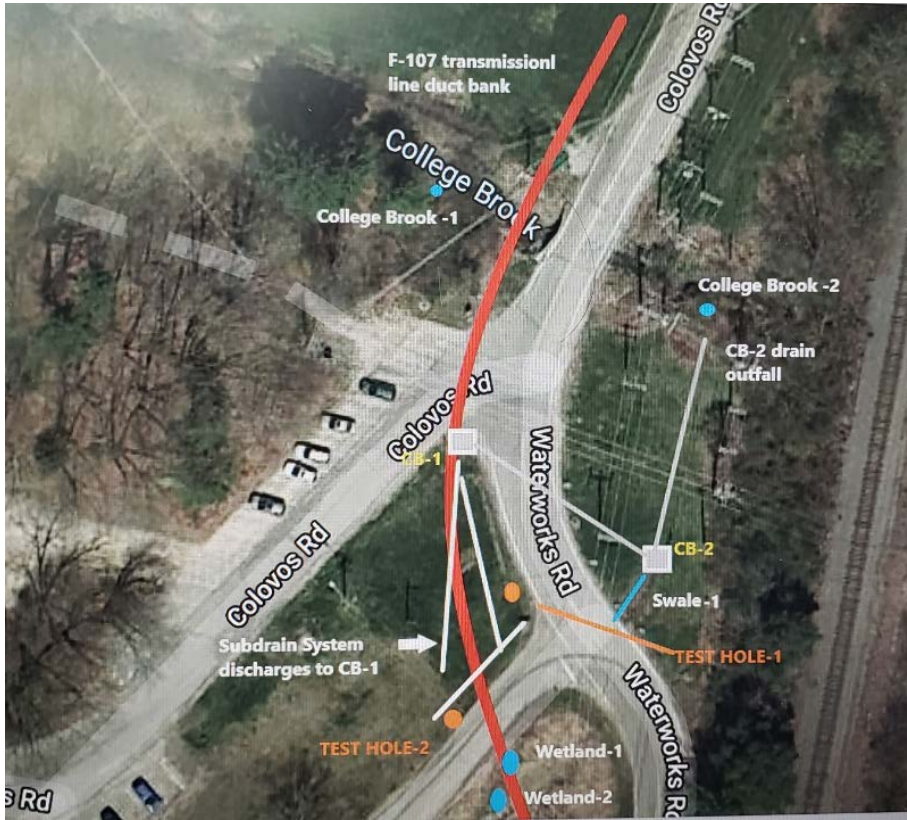


Figure 4: UNH Area of Concern Assessment Plan

Table 2: UNH pH Monitoring Data May 15, 2020

UNH pH Monitoring Data May 15, 2020	
Location	pH Field Reading
Wetland-1	8.9
Wetland-2	7.1
Swale-1	6.8
CB-2 Drain Outfall	7.3
College Brook-1	7.6
College Brook-2	7.7

On May 18, 2020 additional assessment was done to confirm that a subdrain system could be installed to alleviate the breakout of groundwater in the area of concern and that the system would not result in high pH discharge to the storm drain system and ultimately College Brook. In order to assess groundwater in the vicinity of the duct bank and FTB, test holes were dug to a maximum depth of 36 inches. Groundwater was encountered at the Test Hole-1 and Test Hole-2 locations. The pH of the groundwater at these locations was measured at 8.0 and 6.6, respectively. Additional monitoring of the wetland area was also conducted on this date with pH readings of 9.6 and 8.2 observed at the Wetland-1 and Wetland-2 sample

locations, respectively. In addition, seepage from a shallow hole dug near the Wetland-1 sample location had an elevated pH reading of 11.7. The precipitate and elevated pH observed in the wetland complex is discussed further on in this document. Based on the observed test hole pH data, it was determined that a subdrain could be installed in the location shown on Figure 6.

As shown on Figure 6, the subdrain and stone trench system was designed in cooperation with UNH to capture shallow groundwater in the area of concern. The subdrain system, which consists of 6 inches of perforated pipe within a gravel trench, between the depths of approximately 2 feet to 3 feet below grade, discharges to catch basin CB-1. Catch basin CB-1 is piped to the downstream catch basin CB-2 which also receives stormwater flows from Swale-1. CB-2 discharges to College Brook in the vicinity of the College Brook-2 sample location.

UNH Subdrain Installation

The subdrain system was installed by Eversource’s contractor on May 19 and 20, 2020. GZA was on site during the installation and monitored pH of the subdrain effluent. As a precaution, a frac tank was mobilized to the site to recover water in the event that high pH water was observed in the effluent of the subdrain system.

On May 19, 2020, pH of the standing water in CB-1 was measured on five occasions with readings ranging between 7.8 and 8.0. No discharge to the CB-1 was observed on this date.

On May 20, 2020, pH was monitored in catch basins CB-1 and CB-2 and at College Brook. At 0600 hours on May 20, the pH was elevated (10.5) in the standing water of CB-1 (the highest reading observed). There was no discharge to CB-2 at this time which had a measured pH of 6.8. As additional flow entered CB-1 as the storm drain was constructed, pH levels began to normalize and steadily reduce to a final reading of 7.5 measured at 1530 hours.

pH readings in CB-2 peaked at 8.7 at 0945 hours and had a final reading of 7.0 at 1530 hours. pH readings collected from College Brook in the upstream College Brook-1 location was 7.2 at 0620 hours. Two samples were collected at the drainage outfall from CB-2 prior to entering College Brook near the College Brook-2 sample location with pH readings of 8.1 at 0950 hours and 6.9 at 1550 hours.

Table 3: UNH pH Monitoring Data May 20, 2020

UNH pH Monitoring Data May 20, 2020		
Location	Time	pH Field Reading
College Brook-1	0620	7.2
CB-1	0600	10.5
CB-1	0800	10.4
CB-1	0845	9.6
CB-1	0905	9.4
CB-1	0910	9.3

CB-1	0915	9.1
CB-1	0940	8.8
CB-1	1010	8.7
CB-1	1120	8.0
CB-1	1335	7.9
CB-1	1415	7.6
CB-1	1530	7.5
CB-2	0610	6.8
CB-2	0830	6.9
CB-2	0945	8.7
CB-2	1015	8.4
CB-2	1125	7.5
CB-2	1340	7.7
CB-2	1420	7.0
CB-2	1540	7.0
CB-2 Drain Outlet	0950	8.1
CB-2 Drain Outlet	1550	6.9

GZA conducted additional monitoring on May 21, 2020 at the catch basin CB-1 and CB-2 locations and in College Brook. pH readings were in the 7 range at all locations.

Table 4: UNH pH Monitoring Data May 21, 2020

UNH pH Monitoring Data May 21, 2020	
Location	pH Field Reading
CB-1	7.2
CB-2	7.1
College Brook-1	7.5
College Brook-2	7.6

On May 28, 2020, GZA recovered visible traces of calcium precipitate in the cattail wetland area. A round of pH monitoring was also conducted on May 28, 2020. pH data are summarized in Table 5 below. Refer to GZA’s FTB Monitoring Plan for an updated description of sample locations.

Table 5: UNH pH Monitoring Data May 28, 2020

UNH pH Monitoring Data May 28, 2020	
Location	pH Field Reading
Wetland-1	dry
Wetland-2	dry
Wetland-3	6.4
Wetland-4	6.7

CB-1	7.3
CB-2	6.7
Rain Garden-1	7.16
College Brook Up-1	7.59
College Brook Down-2	7.57



Photograph 10: UNH cattail swamp following precipitate removal 5/29/2020

Based on monitoring data collected during and following the subdrain installation work, it appears that the subdrain system is functioning properly and is not negatively affecting surface water quality.

Between May 26 and May 29, 2020, there was no standing water in the area of the cattail swamp where precipitate had been observed. It is possible that the subdrain system is responsible, to some degree, of diverting the post construction condition of shallow seepage that was responsible for the observed precipitate at this location.

Eversource will continue to monitor pH conditions at UNH as described in GZA's FTB Monitoring Plan submitted concurrently with this Report. If elevated pH readings persist, additional assessment/corrective actions will be implemented.

APPENDIX A – LABORATORY REPORTS



CERTIFICATE OF ANALYSIS

Rebecca Cox
GZA GeoEnvironmental, Inc.
5 Commerce Park North
Bedford, NH 03110

RE: SRP - McCourt (04.0190967.00)
ESS Laboratory Work Order Number: 20E0229

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 1:24 pm, May 13, 2020

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: SRP - McCourt

ESS Laboratory Work Order: 20E0229

SAMPLE RECEIPT

The following samples were received on May 11, 2020 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
20E0229-01	29 Gundalow-Deposit-1	Soil	6010C



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: SRP - McCourt

ESS Laboratory Work Order: 20E0229

PROJECT NARRATIVE

Total Metals

DE01124-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
Magnesium (21% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



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CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: SRP - McCourt
Client Sample ID: 29 Gundalow-Deposit-1
Date Sampled: 05/06/20 07:30
Percent Solids: 65

ESS Laboratory Work Order: 20E0229
ESS Laboratory Sample ID: 20E0229-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Aluminum	1520 (7.65)		6010C		1	KJK	05/12/20 11:30	2.02	100	DE01124
Calcium	210000 (3830)		6010C		100	KJK	05/12/20 11:26	2.02	100	DE01124
Iron	1860 (7.65)		6010C		1	KJK	05/12/20 11:30	2.02	100	DE01124
Magnesium	1730 (15.3)		6010C		1	KJK	05/12/20 11:30	2.02	100	DE01124



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ESS Laboratory Work Order: 20E0229

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DE01124 - 3050B										
Blank										
Aluminum	ND	5.00	mg/kg wet							
Calcium	ND	25.0	mg/kg wet							
Iron	ND	5.00	mg/kg wet							
Magnesium	ND	10.0	mg/kg wet							
LCS										
Aluminum	10100	14.9	mg/kg wet	12650		80	40-160			
Calcium	4990	74.6	mg/kg wet	4443		112	80-120			
Iron	11000	14.9	mg/kg wet	9977		111	80-120			
Magnesium	1620	29.9	mg/kg wet	1547		105	63-137			
LCS Dup										
Aluminum	9850	15.6	mg/kg wet	12650		78	40-160	3	20	
Calcium	4850	78.1	mg/kg wet	4443		109	80-120	3	20	
Iron	10900	15.6	mg/kg wet	9977		109	80-120	2	20	
Magnesium	2000	31.2	mg/kg wet	1547		129	63-137	21	20	D+



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: SRP - McCourt

ESS Laboratory Work Order: 20E0229

Notes and Definitions

- U Analyte included in the analysis, but not detected
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: SRP - McCourt

ESS Laboratory Work Order: 20E0229

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Bedford, NH - GZA/KPB
 Shipped/Delivered Via: ESS Courier

ESS Project ID: 20E0229
 Date Received: 5/11/2020
 Project Due Date: 5/13/2020
 Days for Project: 2 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? Yes
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? Yes
Temp: 2 Iced with: Ice
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? Yes
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about short holds & rushes? Yes / No / NA
- 10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
 a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
 b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
 a. Was there a need to contact the client? Yes / No
 Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	40657	Yes	N/A	Yes	4 oz. Jar	NP	
1	40658	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review

Were all containers scanned into storage/lab? Initials JL
 Are barcode labels on correct containers? Yes / No
 Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
 Are all Hex Chrome stickers attached? Yes / No / NA
 Are all QC stickers attached? Yes / No / NA
 Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [Signature] Date & Time: 5/11/20 14:55
 Reviewed By: [Signature] Date & Time: 5/11/20 1502
 Delivered By: [Signature] Date & Time: 5/11/20 1502

CUSTODY SEAL

DATE 5/7/2020

SIGNATURE R. Coy

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

THIELSCH ENGINEERING, INC.

195 Frances Avenue
Cranston, Rhode Island 02910-2211
Tel. (401) 467-6454
Fax (401) 467-2398

May 20, 2020

Mr. Kevin Braga
ESS Laboratory
185 Frances Avenue
Cranston, RI 02905

SUBJECT: Analysis of Unknown Material
ESS Lab No. 20E0229
TEI Job No. 71200078

Dear Mr. Braga:

Submitted for analysis was one glass jar containing multiple pieces of an unknown deposit material collected from an Eversource site. The sample was identified as ESS Lab No. 20E0229. Thielsch Engineering's Metallurgical Testing Laboratory was asked to perform EDS analysis to determine the composition of the material.

Small pieces of the deposit material were removed from the jar and adhered to carbon tape which was affixed to aluminum studs. Several locations on the samples pieces were analyzed using the Scanning Electron Microscope (SEM) in conjunction with the Energy Dispersive X-Ray Spectrometer (EDS). The EDS spectra generated by the deposit are shown in Figures 1 through 8. The deposit consisted primarily of calcium, oxygen, and carbon, with sodium, aluminum, silicon, chlorine and potassium also detected in each analyzed location. Magnesium and iron were also detected in some of the analyzed locations. The sample pieces were not homogenous, so the relative concentrations of the elements detected (represented by the peak heights in the spectra) varied considerably from location to location. Several areas had significant silicon and aluminum peaks while other areas had much smaller peaks for those elements. All of the elements detected would typically be found in cement.

The remaining sample material will be retained for thirty days and then discarded unless we receive other instructions from you. If you have any questions regarding this report, please do not hesitate to contact us.

Very truly yours,

THIELSCH ENGINEERING, INC.



Julie A. Brown
Laboratory Services Supervisor

Enclosures

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-1

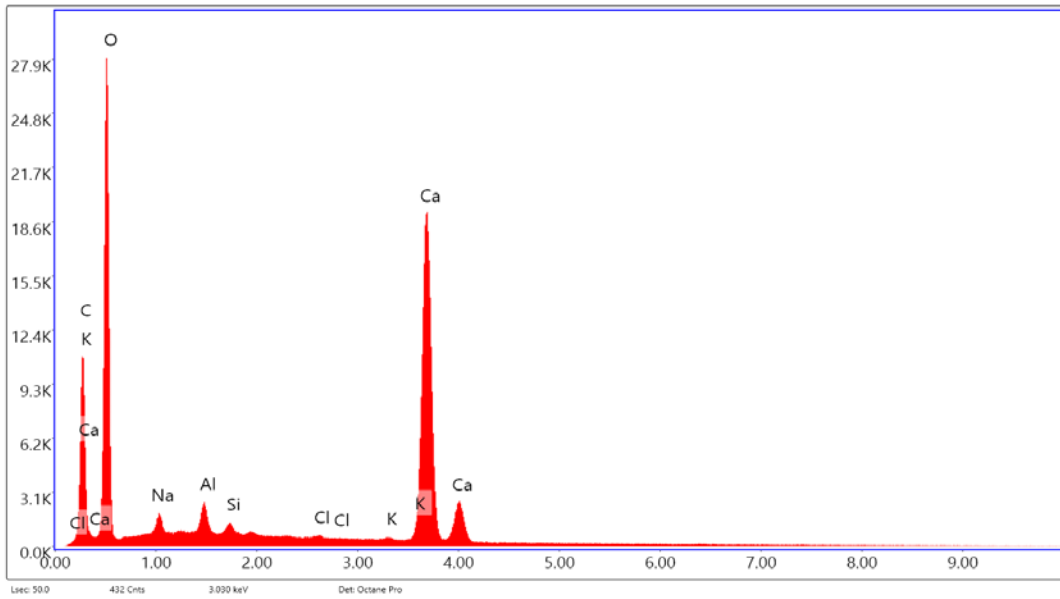


Figure 1: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-2

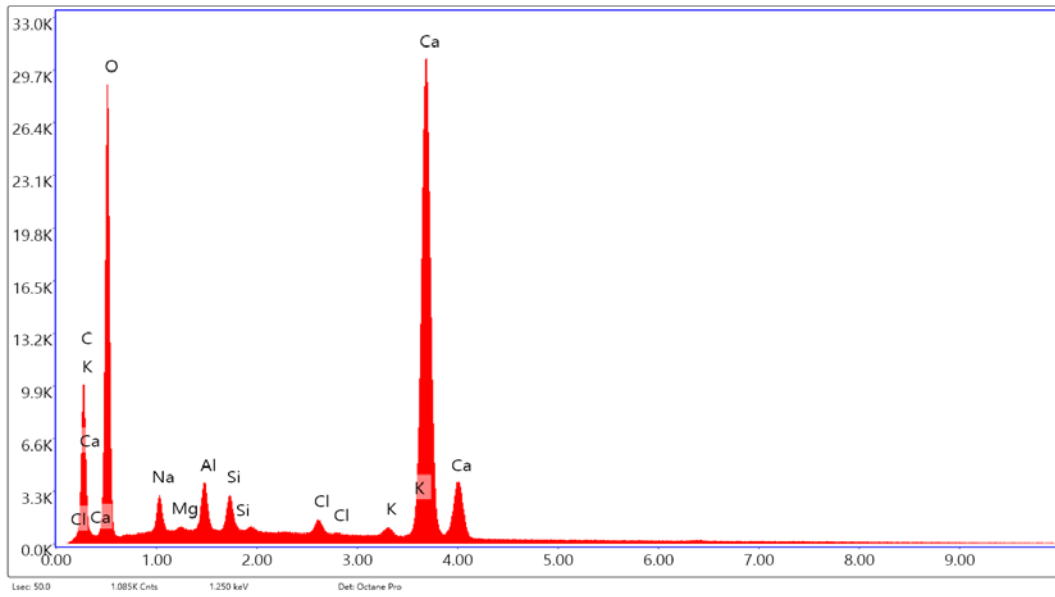


Figure 2: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-3

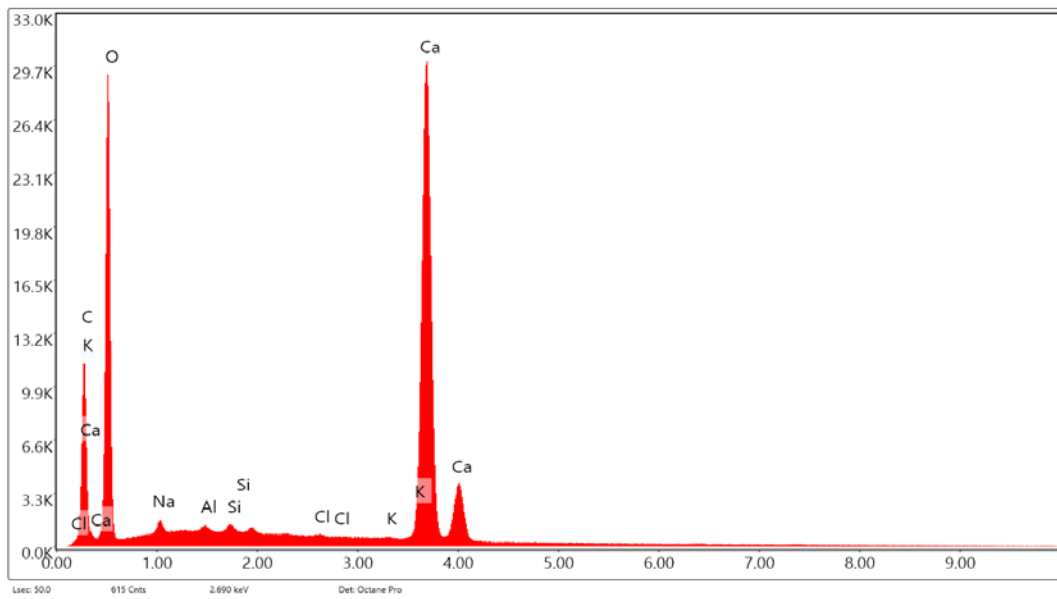


Figure 3: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-4

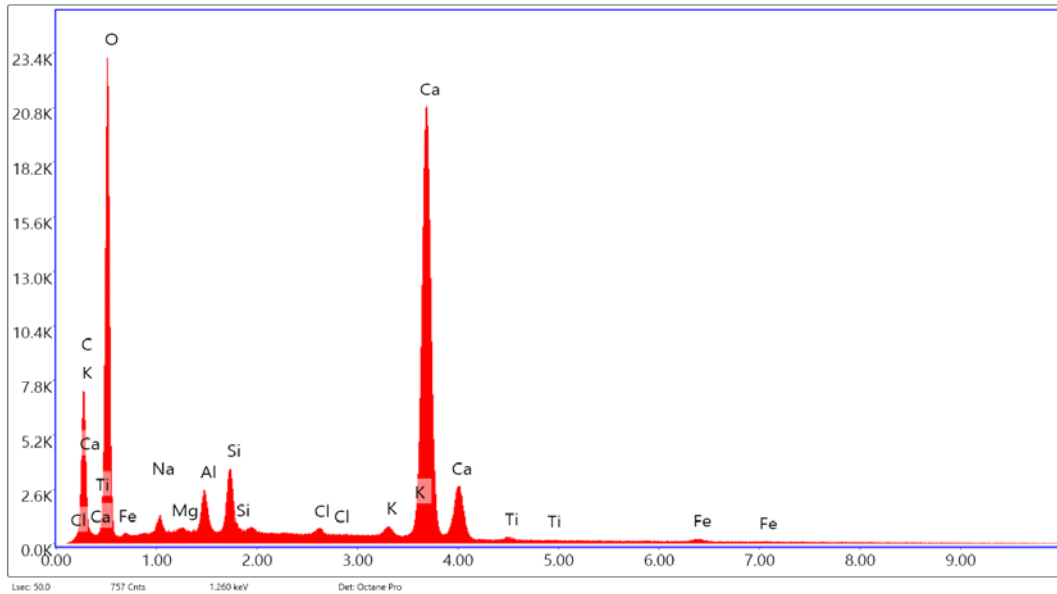


Figure 4: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-5

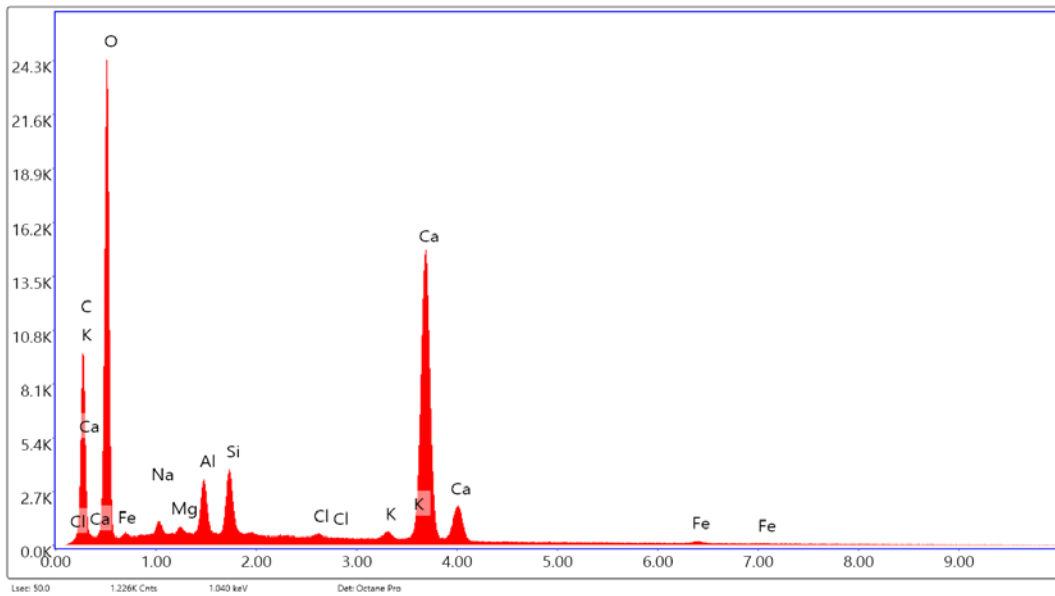


Figure 5: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-6

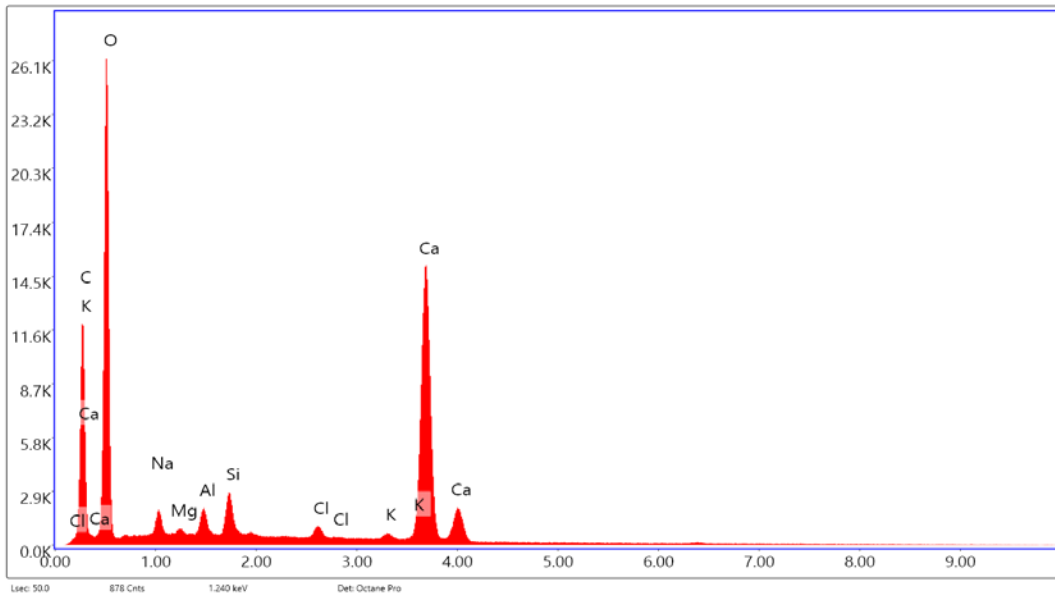


Figure 6: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-7

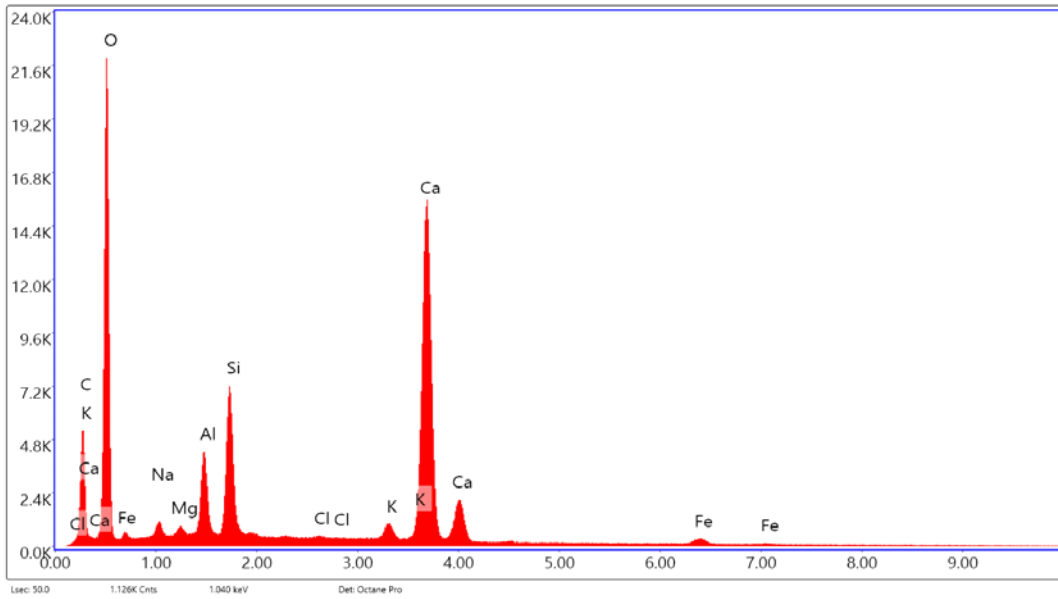


Figure 7: EDS spectrum generated by unknown material

71200078 Eversource | ESS 20E0229-1 | Deposits | 71200078-8

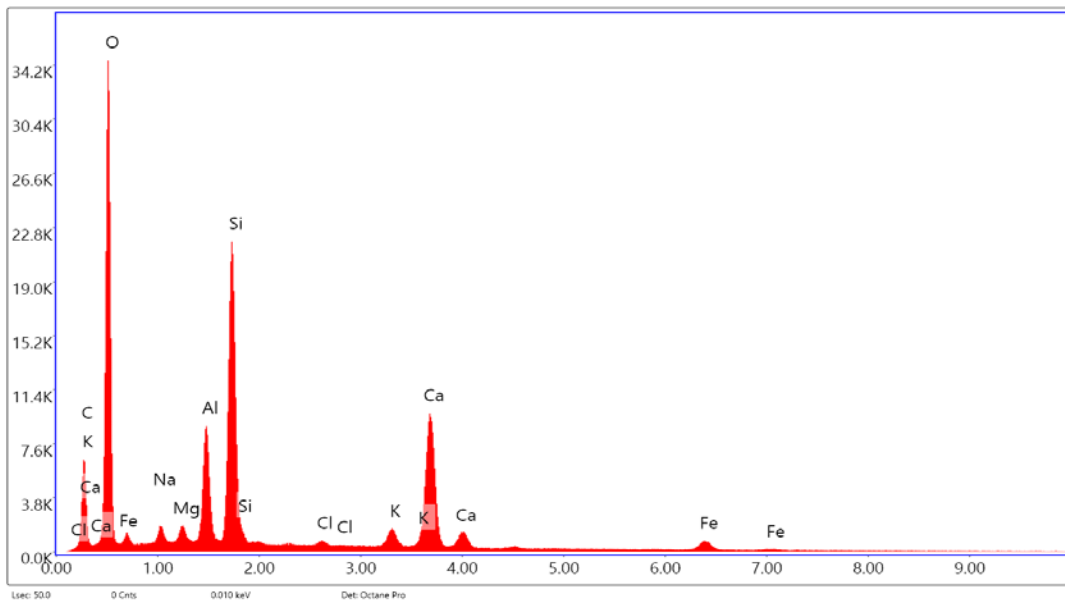


Figure 8: EDS spectrum generated by unknown material



ANALYTICAL REPORT

Lab Number:	L2018806
Client:	GZA GeoEnvironmental, Inc. 5 Commerce Park N. Suite 201 Bedford, NH 03110
ATTN:	Rebecca Cox
Phone:	(603) 232-8762
Project Name:	SRP-MCCOURT
Project Number:	04.0190967.00
Report Date:	05/07/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
Report Date: 05/07/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2018806-01	29 GUNDALOW-050620-1	WATER	NEWINGTON, NH	05/06/20 09:45	05/06/20
L2018806-02	29 GUNDALOW-050620-2	WATER	NEWINGTON, NH	05/06/20 09:50	05/06/20

Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
Report Date: 05/07/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.


Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 05/07/20

INORGANICS & MISCELLANEOUS

Project Name: SRP-MCCOURT

Lab Number: L2018806

Project Number: 04.0190967.00

Report Date: 05/07/20

SAMPLE RESULTS

Lab ID: L2018806-01

Date Collected: 05/06/20 09:45

Client ID: 29 GUNDALOW-050620-1

Date Received: 05/06/20

Sample Location: NEWINGTON, NH

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	12.4		SU	-	NA	1	-	05/07/20 03:05	1,9040C	CB



Project Name: SRP-MCCOURT

Lab Number: L2018806

Project Number: 04.0190967.00

Report Date: 05/07/20

SAMPLE RESULTS

Lab ID: L2018806-02

Date Collected: 05/06/20 09:50

Client ID: 29 GUNDALOW-050620-2

Date Received: 05/06/20

Sample Location: NEWINGTON, NH

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	7.9		SU	-	NA	1	-	05/07/20 03:05	1,9040C	CB



Lab Control Sample Analysis

Batch Quality Control

Project Name: SRP-MCCOURT

Lab Number: L2018806

Project Number: 04.0190967.00

Report Date: 05/07/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1368086-1								
pH	100		-		99-101	-		5

Lab Duplicate Analysis
Batch Quality Control

Project Name: SRP-MCCOURT

Project Number: 04.0190967.00

Lab Number: L2018806

Report Date: 05/07/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1368086-2 QC Sample: L2018806-01 Client ID: 29 GUNDALOW-050620-1						
pH (H)	12.4	12.4	SU	0		5

Project Name: SRP-MCCOURT

Project Number: 04.0190967.00

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information**Container ID** **Container Type**

L2018806-01A Plastic 120ml unpreserved

L2018806-02A Plastic 120ml unpreserved

Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
A	12	12	5.3	Y	Absent		PH-9040(1)
A	7	7	5.3	Y	Absent		PH-9040(1)

Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
Report Date: 05/07/20

GLOSSARY

Acronyms

- DL** - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- EDL** - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
- EMPC** - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- LFB** - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LOD** - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- LOQ** - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NDPA/DPA** - N-Nitrosodiphenylamine/Diphenylamine.
- NI** - Not Ignitable.
- NP** - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
- SRM** - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
- STLP** - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
- TEF** - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
- TEQ** - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
- TIC** - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report



Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
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- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less

Report Format: Data Usability Report



Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
Report Date: 05/07/20

Data Qualifiers

than 5x the RL. (Metals only.)

- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: SRP-MCCOURT
Project Number: 04.0190967.00

Lab Number: L2018806
Report Date: 05/07/20

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

