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July 7, 2017
File No. 01.0171521.52

Ms. Shauna Little
United States Environmental Protection Agency – Region 1
5 Post Office Square, Mail Code OEP06-4
Boston, Massachusetts 02109-3912

Re: Submittal of Notice of Intent (NOI)
Remedial General Permit (RGP)
Wynn Boston Harbor
One Horizon Way
Everett, Massachusetts

Dear Ms. Little:

On behalf of Wynn MA, LLC, GZA GeoEnvironmental, Inc. (GZA) is pleased to submit the attached Notice of Intent (NOI) form (Attachment 1) for the Remedial General Permit (RGP) for the Wynn Boston Harbor casino project (the Site) located in Everett, Massachusetts.

BACKGROUND

The Site is adjoined to the northeast by a vehicle maintenance and repair facility operated by the Massachusetts Bay Transportation Authority (MBTA); to the southeast by properties along Alford Street, including a vacant commercial building and facilities operated by the Boston Water and Sewer Commission (BWSC) and the Massachusetts Water Resources Authority (MWRA); to the southwest by the Mystic River; and to the northwest by railroad tracks for the MBTA Commuter Rail, beyond which are several large commercial/retail buildings associated with the Gateway Center. A Site Locus plan is included as Figure 1 (Attachment 2), and a Site Plan is shown on Figure 2 (Attachment 3).

SITE DEWATERING

During the excavation for the building foundations and utilities, discharge of treated water will be required for the duration of the project. A series of 8-inch diameter water extraction wells were installed inside the deepest area of excavation to draw down the water table within the excavation. The location of the extraction wells are depicted on the Site Plan on Figure 3 (Attachment 4). These dewatering wells will slowly, and systematically be taken off-line as the need to pump from this deep portion of the Site is no longer necessary. The need to manage and treat Site groundwater encountered during the construction of other foundation elements, utilities and improvements will continue at different locations throughout the project.

TREATMENT SYSTEM

The extracted groundwater will be treated with sulfuric acid and/or sodium hydroxide if the pH requires adjustment. Following pH adjustment, the water will be pumped into parallel 18,000-gallon sedimentation tanks where a coagulant (LRT E50) and a flocculent (LRT 800) will be added to facilitate settling of suspended solids. The effluent from the settling tanks will be treated with a series of bag filters, liquid-phase granulated activated carbon (LGAC), cation-



exchange media, and an anionic-exchange media for the removal of cyanide. The maximum flow rate of the system is designed to 500 gallons per minute (gpm) and is limited by the flow capacity of the bag filter assembly. The actual pumping rate may vary due to the size and depth of well/sumps, hydrogeologic characteristics of the soil/fill material, and weather events. The limiting component to flow in the treatment system are the bag filters. The bag filters, LGAC, and ion exchange media will be replaced periodically and the tank will be cleaned out as needed to properly managed accumulated sediments and maintain permit compliance. A flow meter will be installed so that the discharge quantity can be observed and documented. Treatment schematics (Figure 4) are shown in Attachment 5. The treatment system will be accessible for maintenance, monitoring, and sampling purposes.

Chemicals and additives will be applied and stored per the manufacturer's instructions. The pH will be adjusted manually and other chemicals will be applied via mechanical metering pumps. The pH adjustment chemical is a solid caustic and will be stored on pallets in covered, dry areas. The coagulant and flocculant are non-toxic. No chemicals will be added which would result in the exceedance of applicable water quality standards or addition of pollutants in concentrations in excess of permit effluent limitations or that are different or absent in this NOI. The attached SDS sheets (Attachment 5) detail chemical additive information.

NOTICE OF INTENT

This NOI has included a review of literature pertaining to Areas of Critical Environmental Concern (ACEC), Endangered Species Act (ESA), and the National Historic Preservation Act (NHPA), as documented below:

- Review of Appendix II "Summary of Endangered Species Act Listings" indicated that the Northern Long-eared Bat is located state-wide. However, this species is not likely to be present at the 1 Horizon Way address located in the City of Everett, Massachusetts, due to the densely-developed nature of the Site and lack of habitat. Review of the Massachusetts Geographic Information Systems (MassGIS) DEP Priority Resources Map of Everett, shows that there are no ACECs and no habitats of Species of Special Concern or Threatened or Endangered Species within 500 feet of the subject site. Additionally, review of the IPaC online resource of the United States Fish and Wildlife Services (USFWS) indicated that no endangered species or critical habitats are present at the Site. Therefore, permit eligibility meets "Criterion A".
- Review of the "Essential Fish Habitat Designations" for the 10-minute x 10-minute quadrangle encompassing Boston Harbor (Attachment 7), indicated that Essential Fish Habitats for listed species under the jurisdiction of the National Marine Fisheries Service (NMFS) are not present. Therefore, the Site discharge is unlikely to adversely affect listed species or modify critical habitats, and is eligible to select the NMFS criterion.
- Review of the electronic Massachusetts Cultural Resource Information System database, made available through Massachusetts Historical Commission, found no listings for historical areas, buildings, burial grounds, objects, or structures on the Site. Therefore, there is no anticipated impact to historical properties. The documentation of this review can be found in Attachment 8.
- Water Quality Based Effluent Limits (WQBELs) were calculated using the spreadsheet included in Appendix 5 of the RGP (Attachment 9) based on influent and receiving water sampling data. Results applicable to this discharge are included in Section D (4) of the NOI.
- A notice was provided to the City of Everett to notify them of the proposed discharge operating in accordance with an NPDES RGP Permit. A copy of the notification is included as Attachment 10.
- Laboratory analytical results, summarized in Attachment 1, are included as Attachment 11. Groundwater influent samples were collected monthly during discharges conducted under the expired 2010 RGP; the most recent six months of data representing analytes that were required to be sampled under the 2010 RGP, are included in this NOI. Groundwater data for those analytes reported as "Non-Detect" using a sufficiently sensitive test method were



tested on January 8, 2015 and the results submitted to EPA in May 2016, under the expired 2010 permit. Groundwater data for those analytes which were new to the 2016 RGP, (Ammonia, salinity) as well as analytes previously analyzed by a method with insufficient minimum detection levels, were resampled on June 2, 2017. Groundwater influent samples collected during recent discharges and for parameters requiring new or reanalysis, were collected from a sampling port prior to any treatment system component. Groundwater influent samples for parameters with existing data were collected from six locations; GZ-003, GZ-005, GZ-006, GZ-010, GZ-019, and GZ-024. These wells are located within the footprint of the foundation area currently being dewatered.

- A dilution factor for metals does not apply since the discharge is to saltwater .

Please do not hesitate to contact the undersigned at (781) 278-3700 if you have any questions or require further information.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Andrew Sargent
Engineer I

Matthew Smith P.E., LSP
Associate Principal

Randy Meuse
Consultant/Reviewer, Principal

- Attachments:
- Attachment 1: NOI Form
 - Attachment 2: Figure 1 – Site Locus Map
 - Attachment 3: Figure 2 – Site Plan
 - Attachment 4: Figure 3 – Dewatering Well Layout
 - Attachment 5: Figure 4 – Process Flow Diagram and SDS's
 - Attachment 6: Figure 5 – Discharge Outfall Location
 - Attachment 7: ESA and EFH Documentation
 - Attachment 8: MHC Report
 - Attachment 9: WQBEL Calculation Spreadsheet
 - Attachment 10: City of Everett Notification
 - Attachment 11: Laboratory Analytical Reports

cc: MassDEP – Northeastern Region



Attachment 1: NOI Form

II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

1. Name of site:	Site address:		
	Street:		
	City:	State:	Zip:
2. Site owner Owner is (check one): <input type="checkbox"/> Federal <input type="checkbox"/> State/Tribal <input type="checkbox"/> Private <input type="checkbox"/> Other; if so, specify:	Contact Person:		
	Telephone:	Email:	
	Mailing address:		
	Street:		
	City:	State:	Zip:
3. Site operator, if different than owner	Contact Person:		
	Telephone:	Email:	
	Mailing address:		
	Street:		
	City:	State:	Zip:
4. NPDES permit number assigned by EPA: NPDES permit is (check all that apply): <input type="checkbox"/> RGP <input type="checkbox"/> DGP <input type="checkbox"/> CGP <input type="checkbox"/> MSGP <input type="checkbox"/> Individual NPDES permit <input type="checkbox"/> Other; if so, specify:	5. Other regulatory program(s) that apply to the site (check all that apply):		
	<input type="checkbox"/> MA Chapter 21e; list RTN(s): <input type="checkbox"/> NH Groundwater Management Permit or Groundwater Release Detection Permit:	<input type="checkbox"/> CERCLA <input type="checkbox"/> UIC Program <input type="checkbox"/> POTW Pretreatment <input type="checkbox"/> CWA Section 404	

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Receiving water is (check any that apply): <input type="checkbox"/> Outstanding Resource Water <input type="checkbox"/> Ocean Sanctuary <input type="checkbox"/> territorial sea <input type="checkbox"/> Wild and Scenic River		
2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No Are sensitive receptors present near the site? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, specify:		
3. Indicate if the receiving water(s) is listed in the State’s Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP.		
4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.		
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.		
6. Has the operator received confirmation from the appropriate State for the 7Q10 and dilution factor indicated? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate date confirmation received:		
7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No		

C. Source water information:

1. Source water(s) is (check any that apply):			
<input type="checkbox"/> Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> The receiving water <input type="checkbox"/> A surface water other than the receiving water; if so, indicate waterbody:	<input type="checkbox"/> Potable water; if so, indicate municipality or origin: <input type="checkbox"/> Other; if so, specify:

2. Source water contaminants:	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): <input type="checkbox"/> Existing discharge <input type="checkbox"/> New discharge <input type="checkbox"/> New source	
Outfall(s):	Outfall location(s): (Latitude, Longitude)
Discharges enter the receiving water(s) via (check any that apply): <input type="checkbox"/> Direct discharge to the receiving water <input type="checkbox"/> Indirect discharge, if so, specify: <input type="checkbox"/> A private storm sewer system <input type="checkbox"/> A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No Has the operator has received permission from the owner to use such system for discharges? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No, if so, explain, with an estimated timeframe for obtaining permission: Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	
Provide the expected start and end dates of discharge(s) (month/year):	
Indicate if the discharge is expected to occur over a duration of: <input type="checkbox"/> less than 12 months <input type="checkbox"/> 12 months or more <input type="checkbox"/> is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No	

2. Activity Category: (check all that apply)	3. Contamination Type Category: (check all that apply)	
<input type="checkbox"/> I – Petroleum-Related Site Remediation <input type="checkbox"/> II – Non-Petroleum-Related Site Remediation <input type="checkbox"/> III – Contaminated Site Dewatering <input type="checkbox"/> IV – Dewatering of Pipelines and Tanks <input type="checkbox"/> V – Aquifer Pump Testing <input type="checkbox"/> VI – Well Development/Rehabilitation <input type="checkbox"/> VII – Collection Structure Dewatering/Remediation <input type="checkbox"/> VIII – Dredge-Related Dewatering	a. If Activity Category I or II: (check all that apply) <input type="checkbox"/> A. Inorganics <input type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds <input type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> F. Fuels Parameters	
	b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)	
	<input type="checkbox"/> G. Sites with Known Contamination	<input type="checkbox"/> H. Sites with Unknown Contamination
	c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply) <input type="checkbox"/> A. Inorganics <input type="checkbox"/> B. Non-Halogenated Volatile Organic Compounds <input type="checkbox"/> C. Halogenated Volatile Organic Compounds <input type="checkbox"/> D. Non-Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> E. Halogenated Semi-Volatile Organic Compounds <input type="checkbox"/> F. Fuels Parameters	d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia								Report mg/L	---
Chloride								Report µg/l	---
Total Residual Chlorine								0.2 mg/L	
Total Suspended Solids								30 mg/L	---
Antimony								206 µg/L	
Arsenic								104 µg/L	
Cadmium								10.2 µg/L	
Chromium III								323 µg/L	
Chromium VI								323 µg/L	
Copper								242 µg/L	
Iron								5,000 µg/L	
Lead								160 µg/L	
Mercury								0.739 µg/L	
Nickel								1,450 µg/L	
Selenium								235.8 µg/L	
Silver								35.1 µg/L	
Zinc								420 µg/L	
Cyanide								178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX								100 µg/L	---
Benzene								5.0 µg/L	---
1,4 Dioxane								200 µg/L	---
Acetone								7.97 mg/L	---
Phenol								1,080 µg/L	

E. Treatment system information

<p>1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)</p> <p><input type="checkbox"/> Adsorption/Absorption <input type="checkbox"/> Advanced Oxidation Processes <input type="checkbox"/> Air Stripping <input type="checkbox"/> Granulated Activated Carbon (“GAC”)/Liquid Phase Carbon Adsorption</p> <p><input type="checkbox"/> Ion Exchange <input type="checkbox"/> Precipitation/Coagulation/Flocculation <input type="checkbox"/> Separation/Filtration <input type="checkbox"/> Other; if so, specify:</p>	
<p>2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.</p> <p>Identify each major treatment component (check any that apply):</p> <p><input type="checkbox"/> Fractionation tanks <input type="checkbox"/> Equalization tank <input type="checkbox"/> Oil/water separator <input type="checkbox"/> Mechanical filter <input type="checkbox"/> Media filter</p> <p><input type="checkbox"/> Chemical feed tank <input type="checkbox"/> Air stripping unit <input type="checkbox"/> Bag filter <input type="checkbox"/> Other; if so, specify:</p> <p>Indicate if either of the following will occur (check any that apply):</p> <p><input type="checkbox"/> Chlorination <input type="checkbox"/> De-chlorination</p>	
<p>3. Provide the design flow capacity in gallons per minute (gpm) of the most limiting component.</p> <p>Indicate the most limiting component:</p> <p>Is use of a flow meter feasible? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No, if so, provide justification:</p>	
<p>Provide the proposed maximum effluent flow in gpm.</p>	
<p>Provide the average effluent flow in gpm.</p>	
<p>If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:</p>	
<p>4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

Algaecides/biocides Antifoams Coagulants Corrosion/scale inhibitors Disinfectants Flocculants Neutralizing agents Oxidants Oxygen scavengers pH conditioners Bioremedial agents, including microbes Chlorine or chemicals containing chlorine Other; if so, specify:

2. Provide the following information for each chemical/additive, using attachments, if necessary:

- a. Product name, chemical formula, and manufacturer of the chemical/additive;
- b. Purpose or use of the chemical/additive or remedial agent;
- c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
- d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
- e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
- f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): Yes No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive? (check one): Yes No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

- FWS Criterion A:** No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".
- FWS Criterion B:** Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): Yes No; if no, is consultation underway? (check one): Yes No
- FWS Criterion C:** Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) the operator EPA Other; if so, specify:

NMFS Criterion: A determination made by EPA is affirmed by the operator that the discharges and related activities will have “no effect” or are “not likely to adversely affect” any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): Yes No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): Yes No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): Yes No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

- Criterion A:** No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.
- Criterion B:** Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.
- Criterion C:** Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): Yes No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): Yes No

I. Supplemental information

Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): Yes No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): Yes No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement: **A BMPP meeting the requirements of this general permit will be implemented upon the submittal of this NOI.**

Notification provided to the appropriate State, including a copy of this NOI, if required. Check one: Yes No

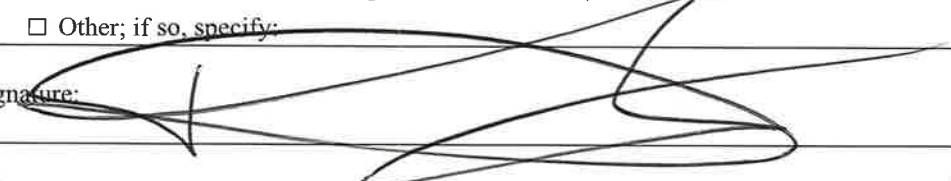
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested. Check one: Yes No

Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested. Check one: Yes No NA

Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission. Check one: Yes No NA

Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): RGP DGP CGP MSGP Individual NPDES permit Other; if so, specify: _____ Check one: Yes No NA

Signature:



Date:

2/6/07

Print Name and Title:

THOMAS SPENCE Project Executive
Suffolk Construction Co.

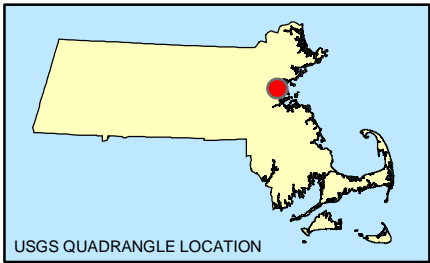


Attachment 2: Figure 1 – Site Locus Map

© 2014 - GZA GeoEnvironmental, Inc., J:\170,000-179,999\171521171521-05_DEL\FIGURES\GIS\MXDs\171521-05_LocusPlan_1HorizonWayEverett_FIG1.mxd, 10/14/2014, 1:00:54 PM, Elaine.donohue



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SOURCE : THIS MAP CONTAINS THE ESRI ARCGIS ONLINE USA TOPOGRAPHIC MAP SERVICE, PUBLISHED DECEMBER 12, 2009 BY ESRI ARCGIS SERVICES AND UPDATED AS NEEDED. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS.

Data Supplied by :



PROJ. MGR.: DEL
 DESIGNED BY: DEL
 REVIEWED BY: LF
 OPERATOR: EMD
 DATE: 10-14-2014

LOCUS PLAN

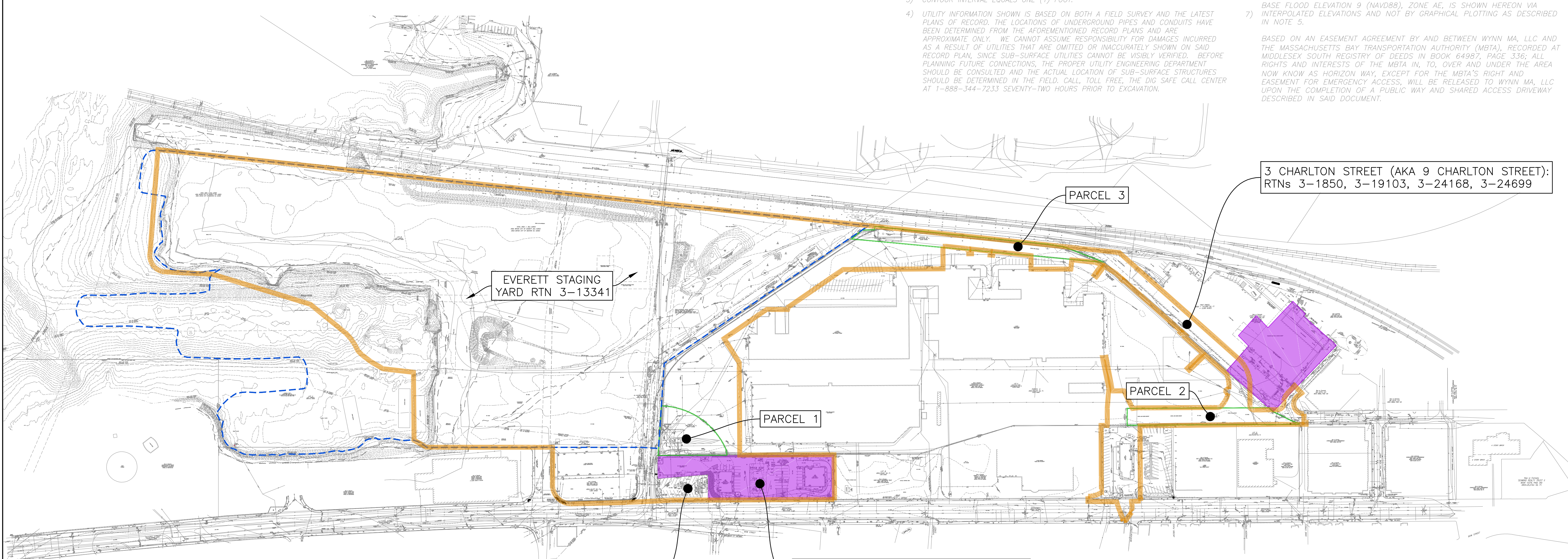
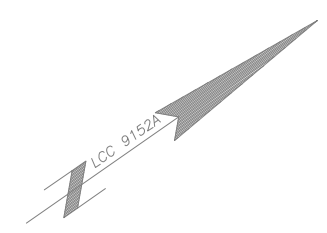
1 HORIZON WAY EVERETT, MASSACHUSETTS

JOB NO.
 01.0171521.05
 FIGURE NO.
 1



Attachment 3: Figure 2 – Site Plan

© 2016 - GZA GeoEnvironmental, Inc. GZA-\\Branch Offices\01\0171521.00 Everett Land Development\Figures and CAD\Remediation CAD\RAM CAD for Viny\Figure 2-4 - RAM Boundary.dwg [Figure 2] April 27, 2016 - 2:08pm_jashua.zai



NOTES:

- 1) ELEVATIONS ESTABLISHED BY GPS. TEMPORARY BENCH MARKS SET: TBM-1, X-CUT ON SOUTHERLY MOST FLANGE BOLT OF A HYDRANT, LOCATED AT THE INTERSECTION OF THE NORTHWESTERLY SIDELINE OF ALFORD STREET AND THE SOUTHWESTERLY SIDELINE OF HORIZON WAY (A.K.A CHEMICAL LANE). AS SHOWN HEREON. ELEVATION = 13.38. TBM-2, SPIKE SET, 1 FOOT ABOVE GRADE IN UTILITY POLE, ON THE NORTHEASTERLY SIDE OF HORIZON WAY (A.K.A. CHEMICAL LANE) APPROXIMATELY 135 FEET FROM THE NORTHWESTERLY SIDELINE OF BROADWAY. AS SHOWN HEREON. ELEVATION = 12.54
- 2) ELEVATIONS REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- 3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.
- 4) UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND THE LATEST PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLAN, SINCE SUB-SURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUB-SURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY-TWO HOURS PRIOR TO EXCAVATION.
- 5) BY GRAPHICAL PLOTTING ONLY, THE PROPERTIES SHOWN HEREON LIE WITHIN A ZONE "AE", AN AREA WITHIN THE 1% ANNUAL CHANCE FLOOD WITH BASE FLOOD ELEVATIONS DETERMINED; A ZONE "X" (SHADED), AN AREA WITHIN THE 0.2% ANNUAL CHANCE FLOOD; AND ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0014G, AND COMMUNITY PANEL NUMBER 250286, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009 AND FLOOD INSURANCE RATE MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS, MAP NUMBER 25017C0439E, AND COMMUNITY PANEL NUMBER 250192, HAVING AN EFFECTIVE DATE OF JUNE 4, 2010.
- 6) BASE FLOOD ELEVATION 9 (NAVD88), ZONE AE, IS SHOWN HEREON VIA INTERPOLATED ELEVATIONS AND NOT BY GRAPHICAL PLOTTING AS DESCRIBED IN NOTE 5.
- 7) BASED ON AN EASEMENT AGREEMENT BY AND BETWEEN WYNN MA, LLC AND THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA), RECORDED AT MIDDLESEX SOUTH REGISTRY OF DEEDS IN BOOK 64987, PAGE 336; ALL RIGHTS AND INTERESTS OF THE MBTA IN, TO, OVER AND UNDER THE AREA NOW KNOWN AS HORIZON WAY, EXCEPT FOR THE MBTA'S RIGHT AND EASEMENT FOR EMERGENCY ACCESS, WILL BE RELEASED TO WYNN MA, LLC UPON THE COMPLETION OF A PUBLIC WAY AND SHARED ACCESS DRIVEWAY DESCRIBED IN SAID DOCUMENT.



LEGEND

<ul style="list-style-type: none"> ⊙ SEWER MANHOLE ⊙ DRAIN MANHOLE ⊙ ELECTRIC MANHOLE ⊙ TELEPHONE MANHOLE ⊙ CABLE TV MANHOLE ⊙ HYDRANT ⊙ WATER SHUT OFF ⊙ GAS SHUT OFF ⊙ CATCH BASIN ⊙ GUY WIRE ⊙ UTILITY POLE ⊙ LIGHT POLE ⊙ ELECTRIC HANDHOLE ⊙ SIGN ⊙ FIRE ALARM ⊙ OBSERVATION WELL ⊙ GATE POST ⊙ BOUND FOUND SB- STONE BOUND CB- CONCRETE BOUND Z- INDICATES COMMON OWNERSHIP ♿ HANDICAP RAMP 	<ul style="list-style-type: none"> FND FOUND ± MORE OR LESS DH DRILL HOLE VGC VERTICAL GRANITE CURB CLF CHAIN LINK FENCE BIT BITUMINOUS CONC CONCRETE NVP NO VISIBLE PIPES RAILROAD TRACKS GUARD RAIL -X-X- METAL FENCE -S- SEWER -D- DRAIN -W- WATER -G- GAS -OHW- OVERHEAD WIRES -V-V-V- RETAINING WALL
---	--

LEGEND

	AUL AREA (APPROXIMATE)
	FORMER EVERETT STAGING YARD DISPOSAL SITE BOUNDARY (RTN 3-13341)
	RAM PROJECT AREA BOUNDARY

- NOTES:**
1. AULs ARE SHOWN ONLY ON PROPERTIES WITHIN RAM BOUNDARIES; ADDITIONAL AULs EXIST IN THE VICINITY.
 2. BASE PLAN FROM FELDMAN PROFESSIONAL LAND SURVEYORS PLAN TITLED "EXISTING CONDITIONS PLAN, BROADWAY (ROUTE 99), EVERETT, MASS." DATED MARCH 20, 2015.

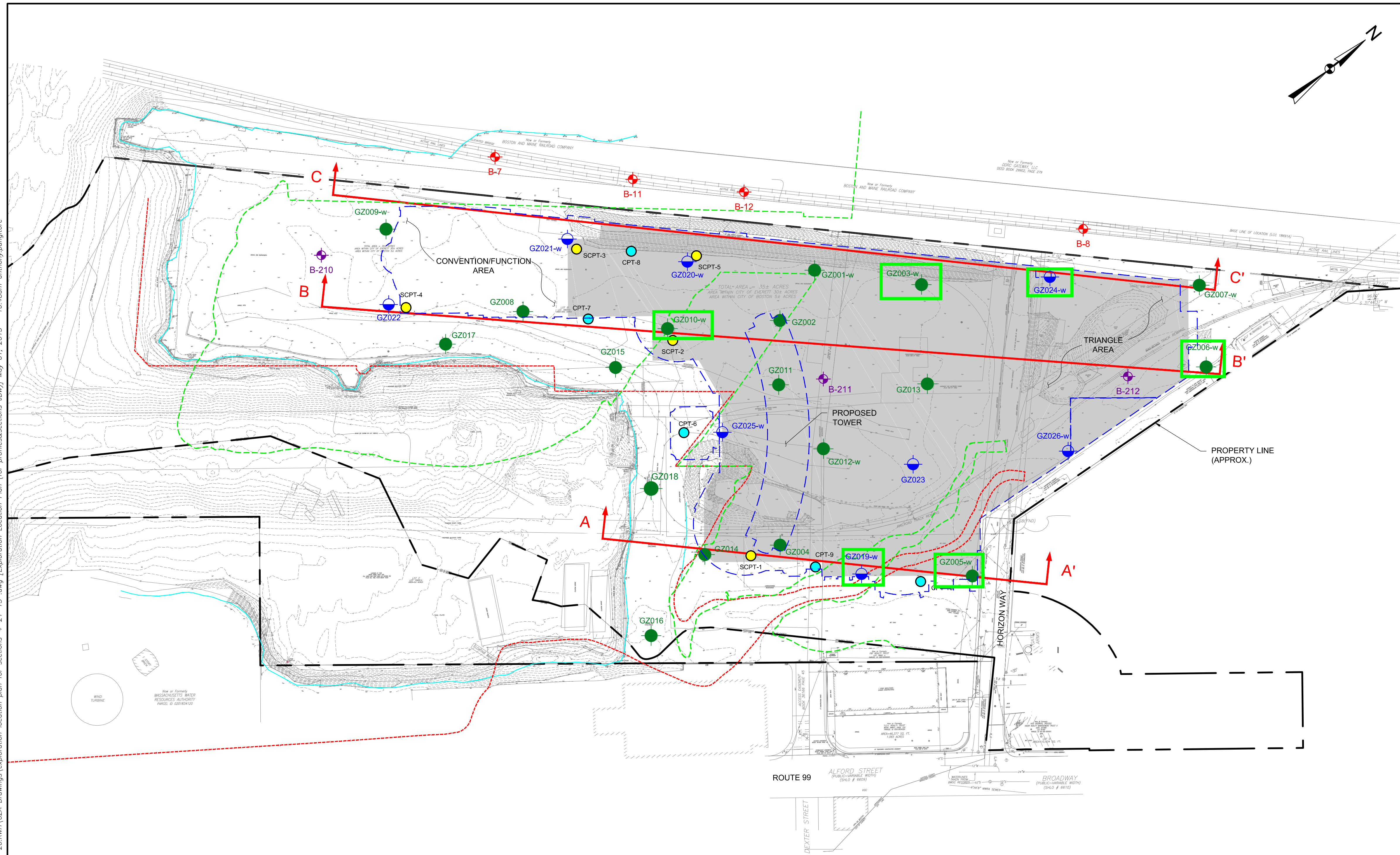
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WYNN EVERETT			
1 HORIZON WAY			
EVERETT, MASSACHUSETTS			
PROPERTIES WITHIN RAM BOUNDARY			
PREPARED BY:	GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: WYNN MA, LLC
PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE 2
DESIGNED BY: VKR	DRAWN BY: JIZ	SCALE: AS SHOWN	
DATE: APRIL, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	SHEET NO. 2 OF 4

ATTACHMENT 3 - SITE PLAN

FIGURE 1 OF 2

© 2015 - GZA GeoEnvironmental, Inc. GZA-1702000-179.999 171521-20.RW1\171521-20.dwg [Exploration Location Plan for sections 4-21-15.dwg] May 01, 2015 - 10:48am anthony.pungitore



LEGEND

- SCPT-1 DESIGNATION AND APPROXIMATE LOCATION OF CPT EXPLORATION WITH SEISMIC SHEAR WAVE VELOCITY TESTING PERFORMED BY CONETEC, INC. OF WEST BERLIN, NEW JERSEY BETWEEN MARCH 24, 2015 AND MARCH 26, 2015.
- CPT-6 DESIGNATION AND APPROXIMATE LOCATION OF CPT EXPLORATION PERFORMED BY CONETEC, INC. OF WEST BERLIN, NEW JERSEY BETWEEN MARCH 24, 2015 AND MARCH 26, 2015.
- GZ025 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY NEW ENGLAND BORING CONTRACTORS OF BROCKTON, MASSACHUSETTS BETWEEN FEBRUARY 12, 2015 AND MARCH 7, 2015. TEST BORINGS OBSERVED BY GZA. "-w" INDICATES MONITORING WELL INSTALLED.
- GZ001 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY NEW ENGLAND BORING CONTRACTORS OF BROCKTON, MASSACHUSETTS BETWEEN OCTOBER 15, 2014 AND JANUARY 7, 2015. TEST BORINGS OBSERVED BY GZA. "-w" INDICATES MONITORING WELL INSTALLED.
- B-7 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY CARR-DEE TEST BORING AND CONSTRUCTION COMPANY OF MEDFORD, MASSACHUSETTS BETWEEN SEPTEMBER 30, 1980 AND OCTOBER 17, 1980. TEST BORINGS OBSERVED BY GZA.
- B-210 DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS DRILLED BY NORTHERN DRILL SERVICE INC. OF NORTHBOROUGH, MASSACHUSETTS BETWEEN DECEMBER 14, 2012 AND DECEMBER 21, 2012. TEST BORINGS OBSERVED BY GEI.
- FOOTPRINT OF PROPOSED BELOW GRADE PARKING GARAGE.
- FOOTPRINT OF PROPOSED BUILDING.
- TOP OF COASTAL BANK
- APPROXIMATE HISTORIC SHORELINE CIRCA 1918.
- APPROXIMATE HISTORIC SHORELINE CIRCA 1921.
- ↑↑ A A' SUBSURFACE PROFILE LINE
- Wells Sampled in January 2015 for Remediation General Permit

- NOTES:**
1. THE BASE MAP WAS DEVELOPED FROM ELECTRONIC FILES PROVIDED BY FELDMAN, PROFESSIONAL LAND SURVEYORS ON JANUARY 15, 2015. CAD FILE: 14517-EX-FBT-1-15-2015.DWG.
 2. PROPOSED BUILDING LAYOUT BASED ON PERMIT LEVEL SITE DEVELOPMENT PLAN ENTITLED "W151004ss0_3.27.15.dwg", PREPARED BY BOHLER ENGINEERING, DATED APRIL 15, 2015.



UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

ATTACHMENT 3 - SITE PLAN

FIGURE 2 OF 2

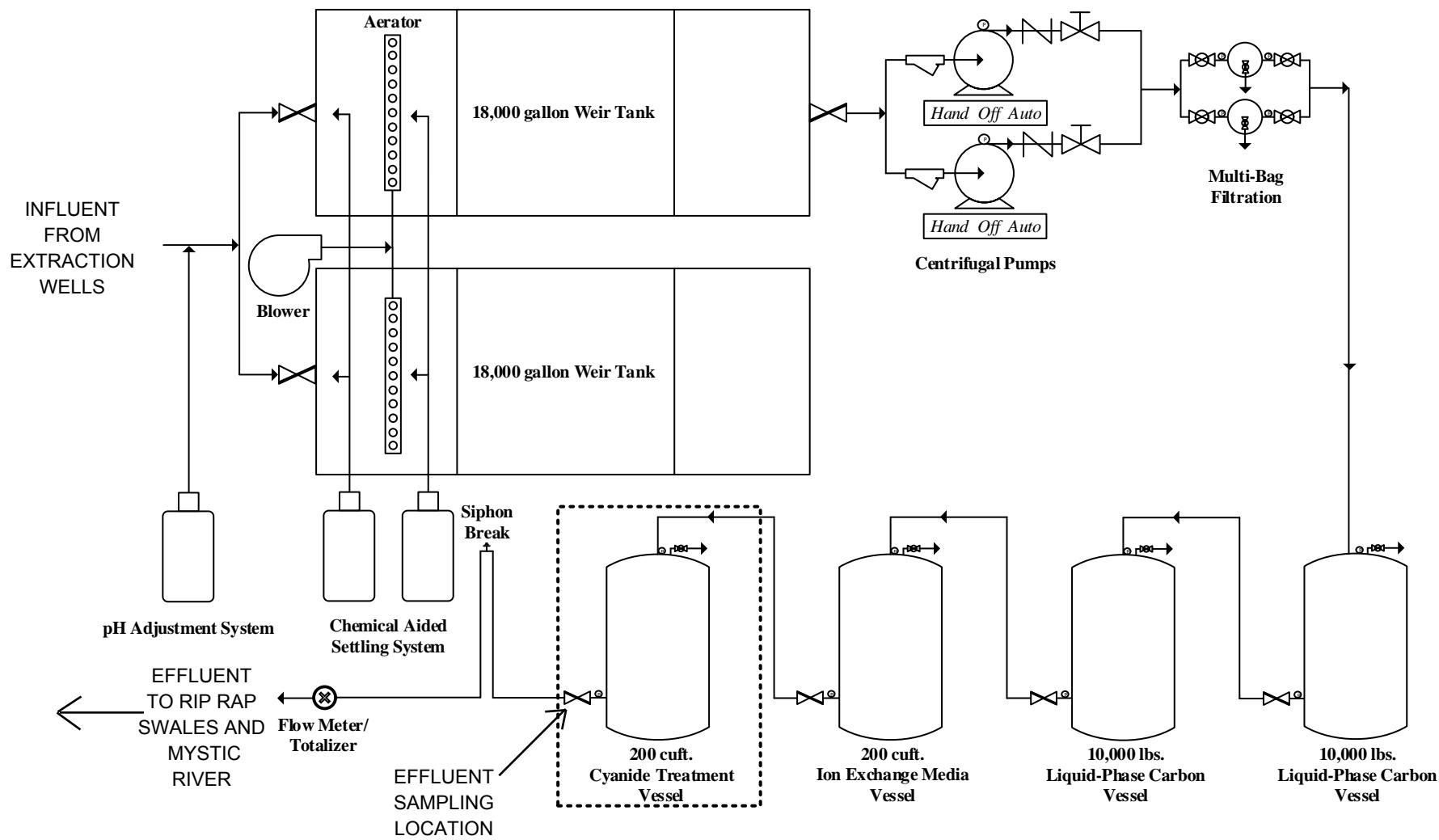
WYNN EVERETT EVERETT, MASSACHUSETTS			
SUBSURFACE EXPLORATION LOCATION PLAN			
PREPARED BY:			
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com			
PROJ MGR:	RWH	REVIEWED BY:	MH
DESIGNED BY:	MH	CHECKED BY:	MH
DATE:	5-1-2015	DRAWN BY:	CFR
		PROJECT NO.:	01.0171521.20
		SCALE:	AS SHOWN
		REVISION NO.:	0
			FIGURE 2



Attachment 4: Figure 3 – Dewatering Well Layout



Attachment 5: Figure 4 – Process Flow Diagram and SDS's



Notes:

- 1.) Figure is not to scale
- 2.) System rated for 500 GPM
- 3.) Sampling ports located on all treatment system components

Key:

Contingency System Component - - - - -



Lockwood Remediation Technologies, LLC
 89 Crawford Street
 Leominster, MA 01453
 Office: 774-450-7177

DESIGNED BY: LRT DRAWN BY: B. Watkins
 CHECKED BY: DATE: May 23, 2016

Water Treatment System Schematic

Wynn Casino
 One Horizon Way
 Everett, Massachusetts

FIGURE 4

PROJECT No.

FIGURE No.



MATERIAL SAFETY DATA SHEET

I. Chemical Product and Company Identification

Product Name: Nonionic / Anionic Polymer
Product #: LRT- 800 Series Polymers

Distributor: Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774-450-7177
Fax: 885-835-0617
Email: plockwood@lrt-llc.net

For Chemical Emergency - Spill, Leak, Fire, Exposure or Accident
Call **CHEMTEL** - Day or Night – 1800-255-3924

II. Composition and Ingredient Information

Components:	CAS #:
Anionic Polyacrylamide	25085-02-3
Permissible Exposure Limit (PEL):	No information available.
Threshold Limit Value (TLV):	Information not available.

III. Hazard Identification

Primary Routes of Exposure: Skin Contact - Eye Contact - Inhalation

Skin Contact: May cause irritation, especially after prolonged or repeated contact.

Eye Contact: Dust contact and solution may cause irritation.

Ingestion: May cause discomfort or gastrointestinal disturbance. Low oral toxicity.

Inhalation: Dust contact and solution may cause irritation.

Unusual Chronic Toxicity: None Known.

IV. First Aid Measures

Skin Contact: Flush with plenty of soap and water for at least 15 minutes. If irritation persists, get medical attention.

Eyes Contact: Immediately flush with water, continuing for 15 minutes. Immediately contact a physician for additional treatment.

Ingestion: If conscious, immediately give 2 to 4 glasses of water, and induce vomiting by touching finger to back of throat or giving syrup of Ipecac.

CAUTION: If unconscious, having breathing or in convulsions, do not induce vomiting or give water.

Inhalation: Remove to fresh air.

V. Fire-Fighting Measures

Flammability Classification: NFPA - Minimal - Will not burn under normal conditions.

Flash Point: Not flammable.

Flammable and Explosive Limits: UEL: ND LEL: ND

Hazardous Combustion Byproducts:

Thermal decomposition expected to produce carbon monoxide, carbon dioxide, and various nitrous oxides and some HCl vapors.

Extinguishing Media: Foam - Carbon Dioxide - Dry Chemical

AVOID USING WATER - MAY CAUSE EXTREMELY SLIPPERY CONDITIONS.

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus.
Solutions of product are extremely slippery.

Unusual Fire and Explosion Hazards: Material and its solutions are extremely slippery.

VI. Accidental Release Measures

Procedures: Sweep up or shovel into metal or plastic container. Do not use water to clean area; product is very slippery when wet.

Waste Disposal: Incineration and/or disposal in a chemical landfill. Disposer must comply with Federal, State, and Local disposal or discharge laws.

VII. Handling and Storage

Avoid contact with skin, eyes, or clothing.
Do not inhale mist if formed.
Use normal personal hygiene and housekeeping.
Store in a cool dry place.

VIII. Exposure Controls and Personal Protection

Eye Protection: Safety glasses for normal handling conditions.
Splash-proof goggles when handling solutions.
Do not wear contact lens.

Hand Protection: Rubber gloves.

Ventilation: Local exhaust - if dusting occurs. Natural ventilation adequate in absence of dust.

Respiratory Protection: If dusty conditions are encountered, wear NIOSH approved respirator.

Other Protection: Eye wash recommended, full work clothing, add protective rubber clothing if splashing or repeated contact with solution is likely.

IX. Physical and Chemical Properties

Appearance	White granular
State	Solid
Specific Gravity (Water = 1)	0.8 - 1.0
Solubility in Water	Complete

X. Stability and Reactivity

Stability: Product is stable as supplied.

Incompatibility: Oxidizing Agents may cause exothermic reaction.

Hazardous Decomposition or Byproducts:

Thermal decomposition expected to produce carbon oxides, and various nitrous oxides.

Hazardous Polymerization: Will not occur.

XI. Toxicological Information Not listed as a carcinogen by IARC, NTP, OSHA or ACGIH.

XII. Ecological Information This product or a similar product is toxic to fish.

XIII. Disposal Considerations

Incineration and/or disposal in chemical landfill. Disposer must comply with federal, state, and local disposal or discharge laws.

RCRA Status of Unused Material if Discarded: Not a hazardous waste.

Hazardous Waste Number: N/A

XIV. Transport Information

Not DOT regulated. Not a RCRA hazardous waste.

Label Instructions: Signal Word: **"Caution! Products are extremely slippery!"**

XV. Regulatory Information

Reportable Quantity (EPA 40 CFR 302): N/A

Threshold Planning Quantity (EPA 40 CFR 355): N/A

Toxic Chemical Release Reporting (EPA 40 CFR 372): N/A

SARA TITLE 3: Section 311 Hazard Categorizations (40CFR 370): N/A

SARA TITLE 3: Section 313 Information (40CFR 372): N/A

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Information (40CFR 302.4) N/A

US TSCA: Product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C.

XVI. Other Information

Health	0	Scale
Flammability	1	4 = Severe
Reactivity	0	3 = Serious
Personal Protection	F	2 = Moderate
		1 = Slight
		0 = Insignificant

Personal Protective Equipment Guide

A = Safety Glasses	G = Safety Glasses, Gloves, and Vapor Respirator
B = Safety Glasses, Gloves	H = Splash Goggles, Gloves, Apron, Vapor Respirator
Safety Glasses, Gloves, Apron	I = Safety Glasses, Gloves, and Dust & Vapor Respirator
D = Gloves, Apron, Face shield	J = Splash Goggles, Gloves, Apron, and Dust & Vapor Respirator
E = Safety Glasses, Gloves, and Dust Respirator	K = Air Line Hood/Mask, Gloves, Full Suit, Boots
F = Safety Glasses, Gloves, Apron and Dust Respirator	X = Ask supervisor for special handling instructions

ABBREVIATIONS:

ACGIH - American Conference of Governmental Industrial Hygienists
 OSHA - Occupational Safety and Health Administration
 TLV - Threshold Limit Value
 PEL - Permissible Exposure Limit
 TWA - Time Weighted Average
 STEL - Short-Term Exposure Limit
 ANSI - American National Standard Institute
 MSHA - Mine Safety and Health Administration
 NIOSH - National Institute for Occupational Safety & Health
 NA - Not Applicable
 NE - Not Established
 NR - Not Required
 PPE - Personal Protective Equipment
 LEL - Lower Exposure Level
 UEL - Upper Exposure Level



Material Safety Data Sheet

Product Name: LRT E50
MSDS #: 40

Effective date: 3/15/2004
Page 1 of 5

Section 1 – Chemical Product and Company Information

PRODUCT NAME: LRT E50
SYNONYMS: Water And Wastewater Treatment Coagulant/Flocculant
DISTRIBUTOR: Lockwood Remediation Technologies, LLC
89 Crawford Street, Leominster, Massachusetts 01453
Tel: 774-450-7177
Fax: 885-835-0617

NFPA Rating

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

HMS Rating

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

EMERGENCY TELEPHONE NUMBER: CHEMTREC 1-800-424-9300

EMERGENCY OVERVIEW

Clear to slightly hazy, colorless to yellow liquid with no appreciable odor. May cause skin, eye and respiratory irritation.

Section 2 - Composition Information

<u>INGREDIENTS</u>	<u>CAS NO.</u>	<u>% WT/WT</u>	<u>PEL</u>	<u>TLV</u>
Trade Secret Ingredients	Trade Secret	100	*15 mg/m ³ (TD) *5 mg/m ³ (RF)	SOLUBLE SALTS: *2 mg/m ³ (TWA)

*Aluminum metal, (as Al) LISTED AS CARCINOGEN BY:

IARC: NO
OSHA: NO
NTP: NO
ACGIH: NO

PEL: OSHA Permissible Exposure Limit	TWA: Time Weighted Average, 8-hr	TD: Total dust
STEL: Short Term Exposure Limit	TLV: ACGIH Threshold Limit	ND: Nuisance dust
HI: Hazardous Ingredient	C.LIM: Ceiling Limit	INP: Inhalable Particulate
OM: Oil mist	WF: Wax fume	RF: Respirable fraction
ST: Skin TWA		

Material Safety Data Sheet

Product Name: LRT E50
MSDS #: 40

Effective date: 3/15/2004
Page 2 of 5

Section 3 - Hazards Identification

ROUTES OF EXPOSURE

INHALATION: Inhalation of mist or spray may irritate respiratory tract.
SKIN CONTACT: May cause skin irritation, especially on prolonged contact.
SKIN ABSORPTION: No Data
EYE CONTACT: Direct eye contact may cause irritation, redness, and swelling. Prolonged exposure to Aluminum salts may cause conjunctivitis.
INGESTION: May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE: Possible eye, skin and respiratory tract irritation.
CHRONIC OVEREXPOSURE: May aggravate existing skin, eye, and lung conditions. Persons with kidney disorders have an increased risk from exposure based on general information found on aluminum salts.

Section 4 - First Aid Measures

EYES: Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek medical attention.
SKIN: Wash thoroughly with soap and water, remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention if irritation should develop.
INHALATION: Remove to fresh air.
INGESTION: Seek medical attention immediately. Give large amounts of water to drink. If vomiting should occur spontaneously, keep airway clear. Never give anything by mouth to an unconscious person.
NOTES TO PHYSICIAN: Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents. Note: Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Fire Fighting Measures

FLASHPOINT: NAPL
AUTOIGNITION TEMPERATURE: NAPL
EXTINGUISHING MEDIA: Water Spray, Carbon Dioxide, Foam, Dry Chemical.

FLAMMABLE LIMITS IN AIR, % BY VOLUME:
LOWER FLAMMABILITY LIMIT: NAPL
UPPER FLAMMABILITY LIMIT: NAPL

FIRE OR EXPLOSION HAZARDS: May produce hazardous fumes or hazardous decomposition products.
FIRE FIGHTING PROCEDURES: Product is a water solution and nonflammable. In a fire, this product may build up pressure and rupture a sealed container; cool exposed containers with water spray. Use self-contained breathing apparatus in confined areas; avoid breathing vapors or dust.

Material Safety Data Sheet

Product Name: LRT E50
MSDS #: 40

Effective date: 3/15/2004
Page 3 of 5

Section 6 - Accidental Release Measures

Stop leaks. Clean up spill immediately. Build dikes as necessary to contain flow of large spills. Do not allow liquid to enter stream or waterways. For small spills, use soda ash or lime to neutralize, an inert material to absorb, or wash product to a chemical sewer. Place contaminated materials into containers and store in a safe place to await proper disposal. Wear adequate personal protective clothing and equipment. Caution use of soda ash or lime may generate carbon dioxide gas. Provide adequate ventilation to spill area. Approved breathing apparatus may be necessary.

Section 7 - Handling and Storage

PRECAUTIONARY STATEMENTS:

CAUTION!

MAY CAUSE IRRITATION.

Avoid contact with eyes, skin, and clothing.

Avoid breathing mist or spray.

Wear chemical splash goggles, gloves, and protective clothing when handling.

Use with adequate ventilation and employ respiratory protection where mist or spray may be generated.

Wash thoroughly after handling.

May be harmful if swallowed or inhaled.

Keep away from heat and open flame.

Keep container closed when not in use.

FOR INDUSTRIAL USE ONLY.

HANDLING/STORAGE REQUIREMENTS:

Store in a cool, dry place away from direct heat. Keep container tightly closed when not in use. Do not store in unlined metal containers. Product may slowly corrode iron, brass, copper, aluminum and mild steel.

Section 8 - Exposure Controls/Personal Protection

VENTILATION REQUIREMENTS: Local exhaust ventilation recommended.

EYE PROTECTION: Chemical splash goggles and/or face shield.

SKIN PROTECTION: Chemical resistant gloves.

RESPIRATORY PROTECTION: When exposures exceed the PEL, use NIOSH/MSHA approved respirator in accordance with OSHA Respiratory Protection Requirements under 29 CFR 1910.134.

OTHER REQUIRED EQUIPMENT: Standard work clothing and work shoes. Safety shower and eye wash located in immediate area.

Material Safety Data Sheet

Product Name: LRT E50
MSDS #: 40

Effective date: 3/15/2004
Page 5 of 5

Section 12 - Ecological Information

BOD5:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV
BOD28:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV
COD:	mg O2/mg:	NAV
	ppm:	NAV
	Biodegradable, %:	NAV

Aquatic Toxicity:

LC 50 (24 hour, static)	50 mg/L	Ceriodaphnia dubia (1)
LC 50 (48 hour, static)	5 mg/L	Ceriodaphnia dubia (1)

LC 50: Lethal concentration at which 50% of the subjects die

Generated from tests conducted by SEAUS Testing Laboratories Nov., 1993 using EPA /600-4-90/027

Section 13 - Disposal Considerations

Dispose of in accordance with all applicable federal, state and local regulations.

Section 14 - Transportation Information

DOT Proper Shipping Name:

NOT APPLICABLE, NOT RESTRICTED

Harmonized Tariff Schedule Number: 2827.49.50 00

Section 15 - Regulatory Information

This product does not contain any ingredients subject to the reporting requirements of SARA Title III, Section 313 (40 CFR Part 372).

SARA Section 311/312: Acute Health Hazard.

TSCA: Components found in TSCA Inventory.



MATERIAL SAFETY DATA SHEET

ION EXCHANGE RESINS

Product Name: CG10-H, CG10-H-ULTRA, CG10-H-LTOC, CG10-H-SC, CG10-H-NG, CG10-H-C, CG10-H-F, CG10-H-UPS, CG8-H, CG8-H-ULTRA, CG8-H-LTOC, CG8-H-SC, CG8-H-NG, CG8-H-C, CG8-H-F, CG8-H-UPS, CGS-H, CGS-H-C, CGS-H-F, CGS-H-UPS, CG6-H, GP-SAC-H

Cation Exchange Resin, Hydrogen Form

Effective Date: 11/1/07

1. Company Information:

Company Address:

ResinTech, Inc.
1 ResinTech Plaza
160 Cooper Road
West Berlin, NJ 08091 USA

Information Numbers:

Phone Number: 856-768-9600
Fax Number: 856-768-9601
Email: ixresin@resintech.com
Website: www.resintech.com

2. Composition/Ingredients:

Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form.

CAS# 69011-20-7 (35 – 65%)

Water

CAS# 7732-18-5 (35 – 65%)

This document is prepared pursuant to the OSHA Hazard Communication Standard (29CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. Physical/Chemical Data:

Boiling Point:	Not Applicable
Vapor Pressure (MM HG):	Not Applicable
Evaporation Rate (water = 1):	1
Appearance & Odor:	Amber solid beads. No to low odor.
Specific Gravity:	1.2 (water = 1)
Melting Point (deg. F)	Not applicable
Solubility in Water:	Insoluble
Thermal:	May yield oxides of carbon and nitrogen
Vapor Density:	Not Applicable

Product Hazard Rating	Scale
Toxicity = 0	0 = Negligible
Fire = 0	1 = Slight
Reactivity = 0	2 = Moderate
Special – N/A	3 = High
	4 = Extreme

4. Fire & Explosion Hazard Data

Flammable Limits:	800 ° Deg. F
Unusual Fire & Explosion Hazards:	Product is not combustible until moisture is removed, then resin starts to burn in flame at

Ion Exchange Resins

Combustion Products:

230 C. Autoignition occurs above 500C.
Possible fire.

Hazardous combustion products may include and are not limited to: hydrocarbons, sulfur oxides, organic sulfonates, carbon monoxide, carbon dioxide, benzene compounds.

Extinguishing Media:

Water, CO₂, Talc, Dry Chemical

Special Fire Fighting Procedures:

MSHA/NIOSH approved self-contained breathing gear.

5. Reactivity Data

Stability:

Stable

Conditions to Avoid:

Temperatures above 400° F

Hazardous by Products:

See Section 3 above for possible combustion products.

Materials to avoid contact with:

Strong oxidizing agents (i.e. nitric acid)

Hazardous Polymerization:

Material does not polymerize

Storage:

Store in a cool dry place

6. Health Hazards & Sara (Right to Know)

Emergency First Aid Procedures:

Contact with eyes can and skins can cause irritation.

Skin Absorption:

Skin absorption is unlikely due to physical properties.

Ingestion:

Single dose oral LD50 has not been determined.

Single does oral toxicity is believed to be low. No hazards anticipated from ingestion incidental to industrial exposure.

Inhalation:

Vapors are unlikely due to physical properties.

Systemic & Other Effects:

No specific data available, however, repeated exposures are not anticipated to cause any significant adverse effects.

Carcinogenicity:

Not Applicable

Sara – title 3, sections 311 & 312:

All ingredients are non-hazardous

7. First Aid

Eyes:

Irrigate immediately with water for at least 5 minutes.
Mechanical irritation only.

Skin:

No adverse effects anticipated by this route of exposure.

Ingestion:

No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

Inhalation:

No adverse effects anticipated by this route of exposure.

8. Control Measures

Respiratory protection:

Not required for normal uses if irritation occurs from breathing-get fresh air!

Eye protection:

Splash goggles

Ventilation:

Normal

Protective Gloves:

Not required.

9. Safe handling procedures

In Case of Spills:

Sweep up material and transfer to containers. Use caution – the floor will be slippery!



Ion Exchange Resins

Disposal Method:

Bury resin in licensed landfill or burn in approved Incinerator according to local, state, and federal regulations. For resin contaminated with hazardous material, dispose of mixture as hazardous material according to local, state and federal regulations.

10. Additional Information:

Special precautions to be taken in handling and storage:

Practice reasonable care and caution. Metal equipment with feed, regenerant, resin form, and effluent of that process.

TSCA Considerations:

Every different salt or ionic form of an ion-exchange resin is a separate chemical. If you use an ion-exchange resin for ion-exchange purposes and then remove the by-product resin from its vessel or container prior to recovery of the original or another form of the resin or of another chemical, the by-product resin must be listed on the TSCA Inventory (unless an exemption is applicable). It is the responsibility of the customer to ensure that such isolated, recycled by-product resins are in compliance with TSCA. Failure to comply could result in substantial civil or criminal penalties being assessed by the Environmental Protection Agency.

MSDS Status:

Canadian regulatory information added.

11. Regulatory Information: (Not meant to be all-inclusive—selected regulations represented.)

Notice:

The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

12. Canadian Regulations:

WHMIS Information:

The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

This product is not a "Controlled Product" under WHMIS.

Canadian TDG Information:

For guidance, the Transportation of Dangerous Goods Classification for this product is: Not Regulated.

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, ResinTech, Inc. makes no warranty with respect hereto and disclaims all liability from reliance thereon.

Material Safety Data Sheet

RESINTECH, Inc.

Product Name: SBG1, SBG1-HP, SBG1-UPS, SBG1-C, SBG1P, SBG1P-HP, SBG1P-UPS, SBG1P-C, GP-SBA

Strong Base Anion Exchange Resin Chloride Form

1. Company Information:

Company Address:

ResinTech, Inc.
1 ResinTech Plaza
160 Cooper Road
West Berlin, NJ 08091 USA

Information Numbers:

Phone Number: 856-768-9600
Fax Number: 856-768-9601
Email: ixresin@resintech.com
Website: www.resintech.com

2. Composition/Ingredients:

Trimethylamine functionalized chlormethylated copolymer of styrene and divinylbenzene in the chloride form.

CAS# 60177-39-1 (35 – 65%)

Water

CAS# 7732-18-5 (35 – 65%)

This document is prepared pursuant to the OSHA Hazard Communication Standard (29CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. Physical/Chemical Data:

Boiling Point:

Not Applicable

Vapor Pressure (MM HG):

Not Applicable

Evaporation Rate (water = 1):

1

Appearance & Odor:

Light cream to light yellow.

May have amine odor.

Specific Gravity:

1.2 (water = 1)

Melting Point (deg. F)

Not applicable

Solubility in Water:

Insoluble

Thermal:

May yield oxides of carbon and nitrogen

Vapor Density:

Not Applicable

Product Hazard Rating	Scale
Toxicity = 0	0 = Negligible
Fire = 0	1 = Slight
Reactivity = 0	2 = Moderate
Special – N/A	3 = High
	4 = Extreme

4. Fire & Explosion Hazard Data

Flammable Limits:

800 ° Deg. F

Unusual Fire & Explosion Hazards:

Product is not combustible until moisture is removed, then resin starts to burn in flame at 230 C. Autoignition occurs above 500C. Possible fire.

Combustion Products:

Alkylbenzenes, vinylbenzenes, naphthalene, benzaldehydes, phenol, carbon dioxide, water, organic amines, chlorine, nitrogen oxides, ammonia, methyl chloride.

Extinguishing Media:
Special Fire Fighting Procedures:

Water, CO₂, Talc, Dry Chemical
 MSHA/NIOSH approved self-contained
 breathing gear.

5. Reactivity Data

Stability: Stable
Conditions to Avoid: Temperatures above 400° F
Hazardous by Products: See Section 3 above for possible combustion products.
Materials to avoid contact with: Strong oxidizing agents (i.e. nitric acid)
Hazardous Polymerization: Material does not polymerize
Storage: Store in a cool dry place

6. Health Hazards & Sara (Right to Know)

Emergency First Aid Procedures: Contact with eyes can and skins can cause irritation.
Skin Absorption: Skin absorption is unlikely due to physical properties.
Ingestion: Single dose oral LD50 has not been determined. Single does oral toxicity is believed to be low. No hazards anticipated from ingestion incidental to industrial exposure.
Inhalation: Vapors are unlikely due to physical properties.
Systemic & Other Effects: No specific data available, however, repeated exposures are not anticipated to cause any significant adverse effects.
Carcinogenicity: Not Applicable
Sara – title 3, sections 311 & 312: All ingredients are non-hazardous

7. First Aid

Eyes: Irrigate immediately with water for at least 5 minutes. Mechanical irritation only.
Skin: No adverse effects anticipated by this route of exposure.
Ingestion: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.
Inhalation: No adverse effects anticipated by this route of exposure.

8. Control Measures

Respiratory protection: Not required for normal uses if irritation occurs from breathing-get fresh air!
Eye protection: Splash goggles
Ventilation: Normal
Protective Gloves: Not required.

9. Safe handling procedures

In Case of Spills: Sweep up material and transfer to containers. Use caution – the floor will be slippery!
Disposal Method: Bury resin in licensed landfill or burn in approved Incinerator according to local, state, and federal regulations. For resin contaminated with hazardous material, dispose of mixture as hazardous material according to local, state and federal regulations.

10. Additional Information:

Special precautions to be taken in handling and storage:

Practice reasonable care and caution. Metal equipment with feed, regenerant, resin form, and effluent of that process.

TSCA Considerations:

Every different salt or ionic form of an ion-exchange resin is a separate chemical. If you use an ion-exchange resin for ion-exchange purposes and then remove the by-product resin from its vessel or container prior to recovery of the original or another form of the resin or of another chemical, the by-product resin must be listed on the TSCA Inventory (unless an exemption is applicable). It is the responsibility of the customer to ensure that such isolated, recycled by-product resins are in compliance with TSCA. Failure to comply could result in substantial civil or criminal penalties being assessed by the Environmental Protection Agency.

MSDS Status:

Canadian regulatory information added.

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Notice:

The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

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For guidance, the Transportation of Dangerous Goods Classification for this product is: Not Regulated.

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, ResinTech, Inc. makes no warranty with respect hereto and disclaims all liability from reliance thereon.

SECTION 1. PRODUCT IDENTIFICATION

Trade Name **77 % - 100 % Sulfuric Acid**
 Product Code None
 Manufacturers/Distributors NorFalco Inc., 6000 Lombardo Center, The Genesis Bldg, suite 650 Seven Hills, OH 44131
 NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2
 Information Contact André Auger, Administration Assistant
 Product Information 1-905-542-6901 (Mississauga)
 Phone Number (Transportation Emergency) Canada 1-877-ERP-ACID (377-2243)
 Phone Number (Transportation Emergency) U.S.A. 1-800-424-9300 CHEMTREC
 Phone Number (Medical Emergency) **1-418-656-8090**
 Phone Number (Emergency) **CANUTEC 1-613-996-6666**
 Synonyms Dihydrogen Sulfate ; Oil of Vitriol ; Vitriol Brown Oil ; Sulphuric Acid.
 Acide sulfurique (French)
 Name / Chemical Formula Sulfuric Acid / H₂SO₄
 Chemical Family Acid
 Utilization Chemical industries ; Water treatment ; Fertilizer ; Pulp and Paper.
 Manufacturers CEZinc on behalf of Noranda Income Limited Partnership, Salaberry-de-Valleyfield (Quebec) Canada J6T 6L4
 Xstrata Copper, Horne Smelter, Rouyn-Noranda (Quebec) J9X 5B6
 Xstrata Zinc, Brunswick Smelting, Belledune, New Brunswick E0B 1G0
 Xstrata Copper, Kidd Metallurgical Division, Timmins, Ontario P4N 7K1
 Xstrata Nickel, Sudbury Operations, Falconbridge, Ontario P0M 1S0

SECTION 2. HAZARDS IDENTIFICATION

WHMIS (Canada) CLASS D-1A : Very toxic material causing immediate and serious effects
 CLASS E : Corrosive material
 Labeling (EEC) C Corrosive



SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS #	Percentage (%)	# CE	R Phrases ¹
Sulfuric (Acid)	7664-93-9	77 % to 100 %	231-639-5	R35
60 Deg Technical		77.7		
66 Deg Technical		93.2		
1.835 Electrolyte		93.2		
98 % Technical		98		
99 % Technical		99		
100 % Technical		100		
Water	7732-18-5	0-22		

Note 1 : See section 15 for the complete wording of risk phrases.

SECTION 4. FIRST-AID MEASURES

Eye Contact Remove contact lenses if present. Immediately flush eyes with plenty of water, holding eyelids open for at least 15 minutes. Consult a physician. Possibility of conjunctivitis, severe irritation, severe burns, permanent eye damage.

Skin Contact Remove contaminated clothing and shoes as quickly as possible protecting your hands and body. Place under a deluge shower for 15 minutes. Flush exposed skin gently and thoroughly with running water (Pay particular attention to : Folds, crevices, creases, groin). Call a physician if irritation persists. May irritate skin, cause burns (Highly corrosive) and possibility of some scarring.
 Wash contaminated clothing before reusing. While the patient is being transported to a medical facility, continue the application of cold, wet compresses. If medical treatment must be delayed, repeat the flushing with cold water or soak the affected area with cold water to help remove the last traces of sulfuric acid. *Creams or ointments SHOULD NOT be applied before or during the washing phase of treatment.*

Inhalation Take precautions to avoid secondary contamination by residual acids. Remove the person to fresh air. If not breathing, give artificial respiration. Difficult breathing : Give oxygen. Get immediate medical attention. Possibility of damage to the upper respiratory tract and lung tissues. Maintain observation of the patient for delayed onset of pulmonary oedema. May cause irritation to the upper respiratory tract : Coughing, sore throat, shortness of breath.

Ingestion **DO NOT INDUCE VOMITING.** Conscious and alert person : Rinse mouth with water and give ½ to 1 cup of water or milk to dilute material. **Spontaneous vomiting** : Keep head below hips to prevent aspiration ; Rinse mouth and give ½ to 1 cup of water or milk. **UNCONSCIOUS person** : **DO NOT** induce vomiting or give any liquid. **Immediately** obtain medical attention.

Notes to Physicians

Continued washing of the affected area with cold or iced water will be helpful in removing the last traces of sulfuric acid. Creams or ointments should not be applied before or during the washing phase of the treatment.

SECTION 5. FIRE-FIGHTING MEASURES

Flash Point	Not available
Flammable Limits	Not available
Auto-Ignition Temperature	Not available
Products of Combustion	Releases of sulfur dioxide at extremely high temperatures.
Fire Hazard	Not flammable
Explosion Hazard	Reacts with most metals, especially when dilute : Hydrogen gas release (Extremely flammable, explosive). Risk of explosion if acid combined with water, organic materials or base solutions in enclosed spaces (Vacuum trucks, tanks). Mixing acids of different strengths/concentrations can also pose an explosive risk in an enclosed space/container.
Extinguishing media	ERG (Emergency Response Guidebook) : Guide 137 When material is not involved in fire, do not use water on material itself. Small fire : Dry chemical or CO ₂ . Move containers from fire area if you can do it without risk. Large fire : Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only. Fire involving Tanks or Car/Trailer Loads : Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.
Protective equipment	Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Generates heat upon addition of water, with possibility of spattering. Wear full protective clothing. Runoff from fire control may cause pollution. Neutralize run-off with lime, soda ash, etc., to prevent corrosion of metals and formation of hydrogen gas. Wear self-contained breathing apparatus if fumes or mists are present.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill	Review Fire and Explosion Hazards and Safety Precautions before proceeding with clean up. Stop flow if possible. Soak up small spills with dry sand, clay or diatomaceous earth.
Methods	Dike large spills, and cautiously dilute and neutralize with lime or soda ash, and transfer to waste water treatment system. Prevent liquid from entering sewers, waterways, or low areas. If this product is spilled and not recovered, or is recovered as a waste for treatment or disposal, the Reportable Quantity (U.S. DOT) is 1 000 lbs (Based on the sulfuric acid content of the solution spilled). Comply with Federal, State, and local regulations on reporting releases.
Protective equipment	Review Fire Fighting Measures and Handling (Personnel Protection) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

SECTION 7. HANDLING AND STORAGE

Handling	Do not get in eyes, on skin, or on clothing. Avoid breathing vapours or mist. Wear approved respirators if adequate ventilation cannot be provided. Wash thoroughly after handling. Ingestion or inhalation : Seek medical advice immediately and provide medical personnel with a copy of this MSDS.
Conditions for storage	Sulfuric acid must be stored in containers or tanks that have been specially designed for use with sulfuric acid. DO NOT add water or other products to contents in containers as violent reactions will result with resulting high heat, pressure and/or generation of hazardous acid mists. Keep containers away from heat, sparks, and flame. All closed containers must be safely vented before each opening. For more information on sulfuric acid tanks, truck tanks and tank cars including safe unloading information go to www.norfalco.com .

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	# CAS	Control parameters	
		ACGIH (U.S.A.) 2008 TLV-TWA (mg/m ³)	OSHA (U.S.A.) PEL - TWA (mg/m ³)
Sulfuric (Acid)	7664-93-9	0.2 (thoracic fr.)	1
60 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
66 Deg Technical	7664-93-9	0.2 (thoracic fr.)	1
1.835 Electrolyte	7664-93-9	0.2 (thoracic fr.)	1
98 % Technical	7664-93-9	0.2 (thoracic fr.)	1
99 % Technical	7664-93-9	0.2 (thoracic fr.)	1
100 % Technical	7664-93-9	0.2 (thoracic fr.)	1
Water	7732-18-5	Not established	Not established

ACGIH : American Conference of Governmental Industrial Hygienists. OSHA : Occupational Safety and Health Administration.

Note : Sulfuric (Acid) : Exposure limits may be different in other jurisdictions. NIOSH REL-TWA (≤ 10 hours) : 1 mg/m^3 ; IDLH : 15 mg/m^3 .

Consult local authorities for acceptable exposure limits.

Engineering Controls Good general ventilation should be provided to keep vapour and mist concentrations below the exposure limits.
Individual protection Chemical splash goggles ; Full-length face shield/chemical splash goggles combination ; Acid-proof gauntlet gloves, apron, and boots ; Long sleeve wool, acrylic, or polyester clothing ; Acid proof suit and hood ; Appropriate NIOSH respiratory protection.



In case of emergency or where there is a strong possibility of considerable exposure, wear a complete acid suit with hood, boots, and gloves. If acid vapour or mist are present and exposure limits may be exceeded, wear appropriate NIOSH respiratory protection.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance	Liquid (Oily ; Clear to turbid)	Odour	Odourless
Molecular Weight	98.08	Colour	Colourless to light grey
pH (1% soln/water)	< 1	Volatility	< 1 (Butyl Acetate = 1.0)
Boiling Point	193°C to 327 °C (379°F to 621°F) @ 760 mm Hg	Vapour Density	3.4
Melting Point	-35°C to 11°C (-31°F to 52°F)	Dispersion	Yes (Water)
Vapour Pressure	< 0.3 mm Hg @ 25°C (77 °F) < 0.6 mm Hg @ 38°C (100 °F)	Solubility	Yes (Water)

GRADE	Boiling Point		Freezing Point		Specific Gravity
	DEG °C	DEG °F	DEG °C	DEG °F	
60 DEG TECHNICAL	193	380	- 12	10	1.706
66 DEG TECHNICAL	279	535	- 35	- 31	1.835
1.835 ELECTROLYTE	279	535	- 35	- 31	1.835
98 % TECHNICAL	327	621	- 2	29	1.844
99 % TECHNICAL	310	590	4	40	1.842
100 % TECHNICAL	274	526	11	51	1.839

SECTION 10. STABILITY AND REACTIVITY

Stability Yes (Under normal conditions of ambient temperature)
Reactivity Reacts violently with water, organic substances and base solutions with evolution of heat and hazardous mists.
Conditions to avoid Heat : Possibility of decomposition. Release of dangerous gases (Sulfur oxides SO₂, SO₃)
Polymerization Polymerization will not occur.
Incompatibilities Vigorous reactions with : Water; alkaline solutions ; Metals, metal powder ; Carbides ; Chlorates ; Fulminates ; nitrates ; Picrates ; Strong oxidizing, reducing, or combustible organic materials. Hazardous gases are evolved on contact with chemicals such as cyanides, sulfides, and carbides.
Corrosivity Yes

SECTION 11. TOXICOLOGICAL INFORMATION

Routes of Entry Ingestion. Inhalation. Skin and eye contacts.
Carcinogenicity **Strong inorganic acid mists containing sulfuric acid (Occupational exposures) : PROVEN** (Human, Group 1, IARC) ; **SUSPECTED** (Human, Group A2, ACGIH) ; Group X (NTP) ; Classification not applicable to sulfuric acid and sulfuric acid solutions.
Mutagenicity Not applicable.
Teratogenicity Not applicable.
Acute toxicity ORAL (LD50) : $2\ 140 \text{ mg/kg}$ (Rat) ; INHALATION (LC50, 2 hours) : 510 mg/m^3 (Rat) ; 320 mg/m^3 (Mouse). (RTECS).
Acute Effects May be fatal if inhaled or ingested in large quantity. Liquids or acid mists : May produce tissue damage : Mucous membranes (Eyes, mouth, respiratory tract). **Extremely** dangerous by eyes and skin contact (**Corrosive**). Severe irritant for eyes : Inflammation (Redness, watering, itching). Very dangerous in case of inhalation (Mists) at high concentrations : May produce severe irritation of respiratory tract (Coughing, shortness of breath, choking).
Chronic Effects Target organs for acute and chronic overexposure (NIOSH 90-117) : Respiratory system, eyes, skin, teeth.
Acid mists : Overexposure to strong inorganic mists containing sulfuric acid : Possibility of laryngeal cancer (HSBD, IARC). Possibility of irritation of the nose and throat with sneezing, sore throat or runny nose. Headache, nausea and weakness. Gross overexposure : Possibility of irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath. Pulmonary edema with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin. Symptoms may be delayed. Repeated or prolonged exposure to mists may cause : Corrosion of teeth.

Contact (Skin) : Possibility of corrosion, burns or ulcers. Contact with a 1 % solution : Possibility of slight irritation with itching, redness or swelling. Repeated or prolonged exposure (Mist) : Possibility of irritation with itching, burning, redness, swelling or rash.

Contact (Eye) : Possibility of corrosion or ulceration (Blindness may result). Repeated or prolonged exposure (Mist) : Possibility of eye irritation with tearing, pain or blurred vision.

Ingestion : Immediate effects of overexposure : Burns of the mouth, throat, esophagus and stomach, with severe pain, bleeding, vomiting, diarrhea and collapse of blood pressure. Damage may appear days after exposure.

Toxicity : Persons with the following pre-existing conditions warrant particular attention :
Sulfuric (Acid) : Laryngeal irritation.

Eating, drinking and smoking must be prohibited in areas where this material is handled and processed. Wash hands and face before eating, drinking and smoking.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : **Aquatic toxicity** : Slightly to moderately toxic.
Bluegill Sunfish (LC50 ; 48 hours) : 49 mg/l (Tap water, 20 °C, conditions of bioessay not specified). (HSBD).
Flounder (LC50 ; 48 hours) : 100-330 mg/l (Aerated water, conditions of bioessay not specified). (HSBD).

Toxicity to Animals : **EYE** : Concentrated compound is corrosive. 10 % solution : Moderate eye irritant.
SKIN : Concentrated compound is corrosive. 10 % solution : Slight skin irritant.
Single and repeated exposure : Irritation of the respiratory tract ; Corrosion of the respiratory tract ; Lung damage ; Labored breathing ; Altered respiratory rate ; Pulmonary oedema. Repeated exposure : Altered red blood cell count.

Mobility (Soil) : Easy soil seeping under rain action
Persistence and degradability : Sulfate ion : Ubiquitous in the environment. Metabolized by micro-organisms and plants.
Bioaccumulation : Sulfate ion : Ubiquitous in the environment. Metabolized by micro-organisms and plants whitout bioaccumulation.

Biodegradation Products : Not available
Biodegradation Products (Toxicity) : Not applicable

Remarks on Environment : Due to the product's composition, particular attention must be taken for transportation and storage. Protect from rain because the run-off water will become acidic and may be harmful to flora and fauna.

BOD5 and COD : Not available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Cleaned-up material may be an hazardous waste on *Resource Conservation and Recovery Act (RCRA)* on disposal due to the corrosivity characteristic. **DO NOT** flush to surface water or sanitary sewer system. Comply with Federal, State, and local regulations. If approved, neutralize and transfer to waste treatment system.

SECTION 14. TRANSPORT INFORMATION

TDG (Canada) : CLASS 8 Corrosives
PIN : UN1830 SULFURIC ACID PG II

Special Provisions (Transport) : None
DOT (U.S.A.)/IMO (Maritime) : Proper Shipping Name : SULFURIC ACID
Hazard Class : 8
UN N° : 1830
DOT/IMO Label : CORROSIVE
Packing Group : II
Reportable Quantity : 1000 lbs (454 kg)
Shipping Containers : Tank Cars, Tank Trucks, Vessel

ERG : Guide 137



SECTION 15 REGULATORY INFORMATION

Labeling (EEC) : EU (Directive 67/548/EEC) :
Sulfuric (Acid) : C Corrosive (Pictogram)
Annex I Index number : 016-020-00-8 ; EU Consolidated Inventories : EC Number 231-639-5
C ≥ 15 % C ; R35 ; S2, 26, 30, 45.

Risk Phrases (EEC) : R35- Causes severe burns

Safety Phrases (EEC) : S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S30- Nerver add water to this product
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CEPA DSL (CANADA) CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) : On the Domestic Substances List (DSL) ; Acceptable for use under the provisions of CEPA.
 Sulfuric Acid is a Class B Drug Precursor under Health Canada's Controlled Drugs and Substances Act and Precursor Control Regulations.

Regulations (U.S.A.) CERCLA Section 103 Hazardous substances (40 CFR 302.4) ; SARA Section 302 Extremely Hazardous Substances (40 CFR 355) : Yes ; SARA Section 313, Toxic Chemicals (40 CFR 372.65) ; US: TSCA Inventory : Listed :
Sulfuric (Acid) (Final RQ) : 1 000 pounds (454 kg)
 Sulfuric Acid is subject to reporting requirements of Section 313, Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), 40 CFR Part 372.
 Certain companies must report emissions of Sulfuric Acid as required under The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 40 CFR Part 302
 For more information call the SARA Hotline 800-424-9346.
 Strong Inorganic Acid Mists Containing Sulfuric Acid : Chemical listed effective March 14, 2003 to the State of California, Proposal 65.
U.S. FDA Food Bioterrorism Regulations : These regulations apply to Sulfuric Acid when being distributed, stored or used for Food or Food Processing.

Classifications HCS (U.S.A.) Corrosive liquid

NFPA (National Fire Protection Association) (U.S.A.)

Fire Hazard 0 **Reactivity** 2 **Health** 3 **Special Hazard** ACID

NPCA- HMIS Rating

Fire Hazard 0 **Reactivity** 2 **Health** 3

SECTION 16. OTHER INFORMATION

- References**
- TLVs and BEIs (2008). Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. ACGIH, Cincinnati, OH – <http://www.acgih.org>
 - CCOHS (2008) - Canadian Centre for Occupational Health and Safety - <http://www.ccohs.ca/>
 - CSST (2008) - Commission de la Santé et de la Sécurité du Travail (Québec). Service du répertoire toxicologique - <http://www.reptox.csst.qc.ca/>
 - ERG (2008). Emergency Response Guidebook, Developed by the U.S. Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation of Mexico
 - HSDB (2008) - Hazardous Substances Data Bank. TOXNET® Network of databases on toxicology, hazardous chemicals, and environmental health. NLM Databases & Electronic Resources, U.S. National Library of Medicine, NHI, 8600 Rockville Pike, Bethesda, MD 20894 - <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>
 - IARC - Monographs on the Evaluation of Carcinogenic Risks to Humans (collection) - <http://www-cie.iarc.fr/>
 - Merck Index (1999). Merck & CO., Inc, 12th edition
 - NIOSH U.S. (2008) - Pocket Guide to Chemical Hazards - <http://www.cdc.gov/niosh/ntp/>
 - Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition
 - Règlement sur les produits contrôlés (Canada)
 - RTECS (2008). Registry of Toxic Effects of Chemical Substances, NIOSH, CDC
 - Toxicologie industrielle & intoxication professionnelle, 3e édition, Lauwerys

- Glossary**
- CSST : Commission de la Santé et de la Sécurité du Travail (Québec).
 - HSDB : Hazardous Substances Data Bank.
 - IARC : International Agency for Research on Cancer.
 - NIOSH : National Institute of Occupational Safety and Health.
 - NTP : U.S. National Toxicology Program.
 - RTECS : Registry of Toxic Effects of Chemical Substances

Note

For further information, see NorFalco Inc. Sulfuric Acid « Storage and Handling Bulletin ».
 Because of its corrosive characteristics and inherent hazards, Sulfuric Acid should not be used in sewer or drain cleaners or any similar application; regardless of whether they are formulated for residential, commercial or industrial use. NorFalco will not knowingly sell sulfuric acid to individuals or companies who repackage the product for sale as sewer or drain cleaners, or any other similar use.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

For additional information, please visit our website : www.norfalco.com

Written by : Groupe STEM Consultants / NorFalco Sales Inc.

Complete revision : 2009-01-24

Partial review : None

Previous complete revision : 2008-01-24

NorFalco Inc.
NorFalco Sales Inc.

77% - 100% SULFURIC ACID

Verified by : Guy Desgagnés and Eric Kuraitis, Technical Representative - Sulfuric Acid

Request to : André Auger, Administration Assistant Tel. : (905) 542-6901 extension 0 Fax : (905) 542-6914 / 6924
NorFalco Sales Inc., 6755 Mississauga Road, Suite 304, Mississauga, Ontario L5N 7Y2

Notice to Reader

Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. NorFalco Sales Inc. extends no warranty and assumes no responsibility for the accuracy of the content and expressly disclaims all liability for reliance thereon. This material safety data sheet provides guidelines for the safe handling and processing of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : Sodium Hydroxide, 20% w/v
Product code : LC24090

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : For laboratory and manufacturing use only.

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin Corr. 1B H314
Eye Dam. 1 H318

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



GHS05

Signal word (GHS-US) : Danger
Hazard statements (GHS-US) : H314 - Causes severe skin burns and eye damage
Precautionary statements (GHS-US) : P260 - Do not breathe mist, spray, vapours
P264 - Wash exposed skin thoroughly after handling
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P363 - Wash contaminated clothing before reuse
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable
Full text of H-phrases: see section 16

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Water	(CAS No) 7732-18-5	83.12	Not classified

Sodium Hydroxide, 20% w/v

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Name	Product identifier	%	GHS-US classification
Sodium Hydroxide	(CAS No) 1310-73-2	16.88	Acute Tox. 4 (Dermal), H312 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
First-aid measures after skin contact	: Immediately call a POISON CENTER or doctor/physician. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
First-aid measures after ingestion	: Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. Rinse mouth.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	: Causes severe skin burns and eye damage.
Symptoms/injuries after inhalation	: Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
Symptoms/injuries after skin contact	: Caustic burns/corrosion of the skin.
Symptoms/injuries after eye contact	: Causes serious eye damage.
Symptoms/injuries after ingestion	: Abdominal pain. Bleeding of the gastrointestinal tract. Burns to the gastric/intestinal mucosa. Nausea. Possible esophageal perforation.
Symptoms/injuries upon intravenous administration	: Not available.
Chronic symptoms	: Not available.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Carbon dioxide. Dry powder. Water spray. Foam. Sand.
Unsuitable extinguishing media	: Not available. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Not flammable.
Explosion hazard	: Not available.
Reactivity	: Reacts with (some) metals: release of highly flammable gases/vapours (hydrogen). Thermal decomposition generates : Corrosive vapours.

5.3. Advice for firefighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. In case of fire: stop leak if safe to do so. When cooling/extinguishing: no water in the substance. Avoid (reject) fire-fighting water to enter environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	: Not available.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Eliminate ignition sources. Ensure adequate ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
------------------	---

6.1.1. For non-emergency personnel

Protective equipment	: Wear chemically protective gloves, lab coat or apron to prevent prolonged or repeated skin contact.
Emergency procedures	: Wash contaminated clothes. Evacuate unnecessary personnel. Keep containers closed.

6.1.2. For emergency responders

Protective equipment	: Equip cleanup crew with proper protection.
Emergency procedures	: Stop leak if safe to do so. Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Sodium Hydroxide, 20% w/v

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6.3. Methods and material for containment and cleaning up

- For containment : Take up liquid spill into inert absorbent material.
- Methods for cleaning up : Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : May be corrosive to metals.
- Precautions for safe handling : Do not get in eyes, on skin, or on clothing. Remove contaminated clothing immediately. Use corrosionproof equipment. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Do not breathe mist, spray, vapours.
- Hygiene measures : Wash exposed skin thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Comply with applicable regulations.
- Storage conditions : Keep container closed when not in use. Store in original container. Keep only in the original container in a cool, well ventilated place away from : incompatible materials.
- Incompatible products : Strong acids. metals.
- Incompatible materials : Sources of ignition. Direct sunlight.
- Storage temperature : 5 - 30 °C
- Prohibitions on mixed storage : KEEP SUBSTANCE AWAY FROM: (strong) acids. metals. metal powders.
- Storage area : Keep locked up. Store in a well-ventilated place. Keep only in the original container.
- Special rules on packaging : SPECIAL REQUIREMENTS: corrosion-proof.
- Packaging materials : Do not store in corrodable metal.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Sodium Hydroxide (1310-73-2)		
USA ACGIH	ACGIH Ceiling (mg/m ³)	2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	2 mg/m ³

8.2. Exposure controls

- Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- Personal protective equipment : Gloves. Safety glasses. Protective clothing. Head/neck protection. Avoid all unnecessary exposure.



- Hand protection : Wear chemically resistant protective gloves. Wear protective gloves.
- Eye protection : Chemical goggles or face shield.
- Skin and body protection : Wear suitable protective clothing.
- Respiratory protection : In case of inadequate ventilation wear respiratory protection. Wear appropriate mask.
- Thermal hazard protection : None necessary.
- Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Appearance : Clear, colorless liquid.
- Colour : clear. colorless.
- Odour : odorless.
- Odour threshold : No data available

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pH	: ≥ 14
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.18 g/ml
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: 2.8 cSt
Viscosity, dynamic	: No data available
Explosive properties	: No data available.
Oxidising properties	: No data available.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with (some) metals: release of highly flammable gases/vapours (hydrogen). Thermal decomposition generates : Corrosive vapours.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts vigorously with strong oxidizers and acids.

10.4. Conditions to avoid

Incompatible materials. Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

metals. Strong acids.

10.6. Hazardous decomposition products

Sodium oxide. Thermal decomposition generates : Corrosive vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Sodium Hydroxide, 20% w/v	
LD50 dermal rabbit	7997 mg/kg

Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg

Sodium Hydroxide (1310-73-2)	
LD50 dermal rabbit	1350 mg/kg (Rabbit; Literature,Rabbit; Literature)

Skin corrosion/irritation	: Causes severe skin burns and eye damage. pH: ≥ 14
Serious eye damage/irritation	: Causes serious eye damage. pH: ≥ 14
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met

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Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified Based on available data, the classification criteria are not met
Aspiration hazard	: Not classified Based on available data, the classification criteria are not met
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
Symptoms/injuries after skin contact	: Caustic burns/corrosion of the skin.
Symptoms/injuries after eye contact	: Causes serious eye damage.
Symptoms/injuries after ingestion	: Abdominal pain. Bleeding of the gastrointestinal tract. Burns to the gastric/intestinal mucosa. Nausea. Possible esophageal perforation.
Symptoms/injuries upon intravenous administration	: Not available.
Chronic symptoms	: Not available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Ecology - water	: Toxic to aquatic life.

Sodium Hydroxide, 20% w/v	
LC50 fishes 1	269 mg/l
EC50 Daphnia 1	239 mg/l

Sodium Hydroxide (1310-73-2)	
LC50 fishes 1	45.4 mg/l (96 h; <i>Salmo gairdneri</i> (<i>Oncorhynchus mykiss</i>); SOLUTION >=50%)
EC50 Daphnia 1	40.4 mg/l (48 h; <i>Ceriodaphnia</i> sp.; NOMINAL CONCENTRATION)
LC50 fish 2	189 mg/l (48 h; <i>Leuciscus idus</i>)
TLM fish 1	99 mg/l (48 h; <i>Lepomis macrochirus</i>)
TLM fish 2	125 ppm (96 h; <i>Gambusia affinis</i>)

12.2. Persistence and degradability

Sodium Hydroxide, 20% w/v	
Persistence and degradability	Not established.

Sodium Hydroxide (1310-73-2)	
Persistence and degradability	Biodegradability: not applicable. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

12.3. Bioaccumulative potential

Sodium Hydroxide, 20% w/v	
Bioaccumulative potential	Not established.

Sodium Hydroxide (1310-73-2)	
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other adverse effects	: May cause pH changes in aqueous ecological systems.
Other information	: Avoid release to the environment.

Sodium Hydroxide, 20% w/v

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Waste disposal recommendations : Dispose of contents/container to comply with local, state and federal regulations. Dispose in a safe manner in accordance with local/national regulations.
- Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

- UN-No.(DOT) : 1824
- DOT NA no. : UN1824

14.2. UN proper shipping name

- DOT Proper Shipping Name : Sodium hydroxide solution
- Department of Transportation (DOT) Hazard Classes : 8 - Class 8 - Corrosive material 49 CFR 173.136
- Hazard labels (DOT) : 8 - Corrosive substances



- Packing group (DOT) : II - Medium Danger
- DOT Special Provisions (49 CFR 172.102) : B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $95 / (1 + a (tr - tf))$ Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: $a = (d15 - d50) / 35 * d50$ Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
- DOT Packaging Exceptions (49 CFR 173.xxx) : 154
- DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
- DOT Packaging Bulk (49 CFR 173.xxx) : 242
- Marine pollutant : No

14.3. Additional information

- Other information : No supplementary information available.
- State during transport (ADR-RID) : as liquid.

Overland transport

No additional information available

Transport by sea

- DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
- DOT Vessel Stowage Other : 52 - Stow "separated from" acids

Air transport

- DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L
- DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L

SECTION 15: Regulatory information

15.1. US Federal regulations

Sodium Hydroxide, 20% w/v

SARA Section 311/312 Hazard Classes : Immediate (acute) health hazard

Sodium Hydroxide, 20% w/v

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Sodium Hydroxide (1310-73-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

15.2. International regulations

CANADA

Sodium Hydroxide, 20% w/v	
WHMIS Classification	Class E - Corrosive Material
Sodium Hydroxide (1310-73-2)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class E - Corrosive Material

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

15.2.2. National regulations

Sodium Hydroxide (1310-73-2)	
Listed on the Canadian Ingredient Disclosure List	

15.3. US State regulations

Sodium Hydroxide (1310-73-2)	

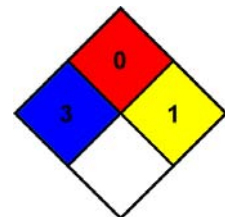
SECTION 16: Other information

Indication of changes : Revision - See : *.
Other information : None.

Full text of H-phrases: see section 16:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Aquatic Acute 3	Hazardous to the aquatic environment — AcuteHazard, Category 3
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Skin Corr. 1A	Skin corrosion/irritation, Category 1A
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H402	Harmful to aquatic life

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.
NFPA fire hazard : 0 - Materials that will not burn.
NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.



HMIS III Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Sodium Hydroxide, 20% w/v

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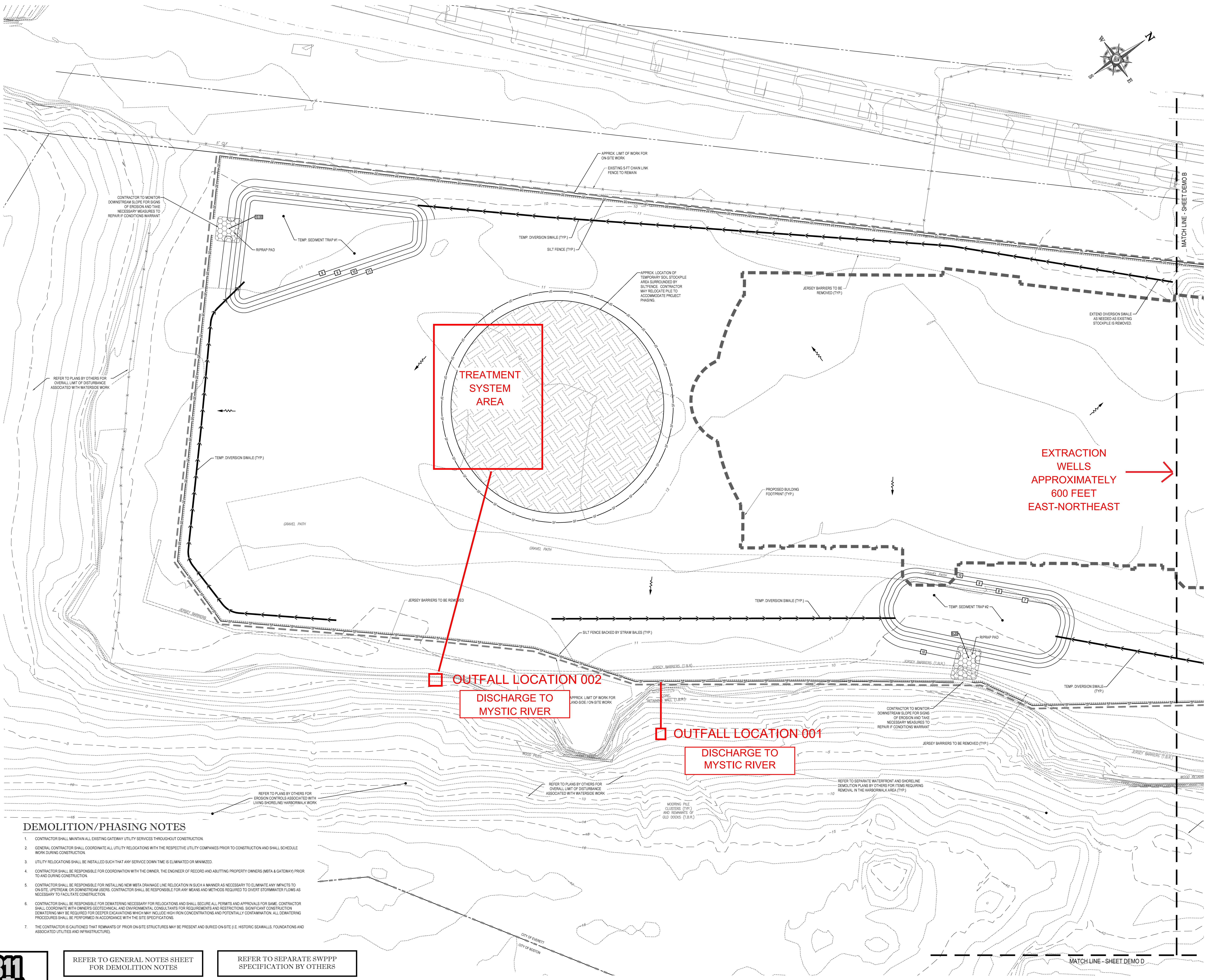
Flammability : 0 Minimal Hazard
Physical : 1 Slight Hazard
Personal Protection : D

SDS US (GHS HazCom 2012)

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

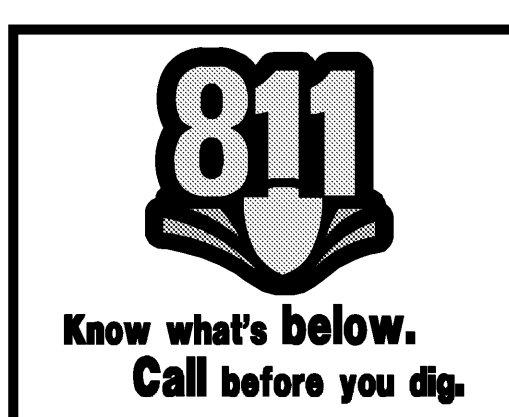


Attachment 6: Figure 5 – Discharge Outfall Location



DEMOLITION/PHASING NOTES

1. CONTRACTOR SHALL MAINTAIN ALL EXISTING GATEWAY UTILITY SERVICES THROUGHOUT CONSTRUCTION.
2. GENERAL CONTRACTOR SHALL COORDINATE ALL UTILITY RELOCATIONS WITH THE RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION AND SHALL SCHEDULE WORK DURING CONSTRUCTION.
3. UTILITY RELOCATIONS SHALL BE INSTALLED SUCH THAT ANY SERVICE DOWNTIME IS ELIMINATED OR MINIMIZED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE OWNER, THE ENGINEER OF RECORD AND ADJACENT PROPERTY OWNERS (M&A & GATEWAY) PRIOR TO AND DURING CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING NEW M&A DRAINAGE LINE RELOCATION IN SUCH A MANNER AS NECESSARY TO ELIMINATE ANY IMPACTS TO ON-SITE, UPSTREAM, OR DOWNSTREAM USERS. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MEANS AND METHODS REQUIRED TO DIVERT STORMWATER FLOWS AS NECESSARY TO FACILITATE CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING NECESSARY FOR RELOCATIONS AND SHALL SECURE ALL PERMITS AND APPROVALS FOR SAME. CONTRACTOR SHALL COORDINATE WITH OWNERS GEOLOGICAL AND ENVIRONMENTAL CONSULTANTS FOR REQUIREMENTS AND RESTRICTIONS. SIGNIFICANT CONSTRUCTION DEWATERING MAY BE REQUIRED FOR DEEPER EXCAVATIONS WHICH MAY INCLUDE HIGH IRON CONCENTRATIONS AND POTENTIALLY CONTAMINATION. ALL DEWATERING PROCEDURES SHALL BE PERFORMED IN ACCORDANCE WITH THE SITE SPECIFICATIONS.
7. THE CONTRACTOR IS CAUTIONED THAT REMAINS OF PRIOR ON-SITE STRUCTURES MAY BE PRESENT AND BURIED ON-SITE (E.G. HISTORIC SEAWALLS, FOUNDATIONS AND ASSOCIATED UTILITIES AND INFRASTRUCTURE).



REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES

REFER TO SEPARATE SWPPP SPECIFICATION BY OTHERS

THIS PLAN TO BE UTILIZED FOR DEMOLITION/ REMOVAL & EROSION CONTROL PURPOSES ONLY

TREATMENT SYSTEM LOCATION AND OUTFALL LOCATION PLAN	
PREPARED BY: GZA	PREPARED FOR: Wynn Everett 1 Horizon Way Everett, Massachusetts
PROJECT NO. 01.0171521.12 DATE 6/30/2017	FIGURE 5



Attachment 7: ESA and EFH Documentation

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Taunton
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnah and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied Cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, Wareham, Halifax, and Pembroke
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Suffolk	Piping Plover	Threatened	Coastal Beaches	Revere, Winthrop
	Red Knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster
	Northern Long-eared Bat	Proposed Endangered	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

¹Migratory only, scattered along the coast in small numbers

-Eastern cougar and gray wolf are considered extirpated in Massachusetts.

-Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.

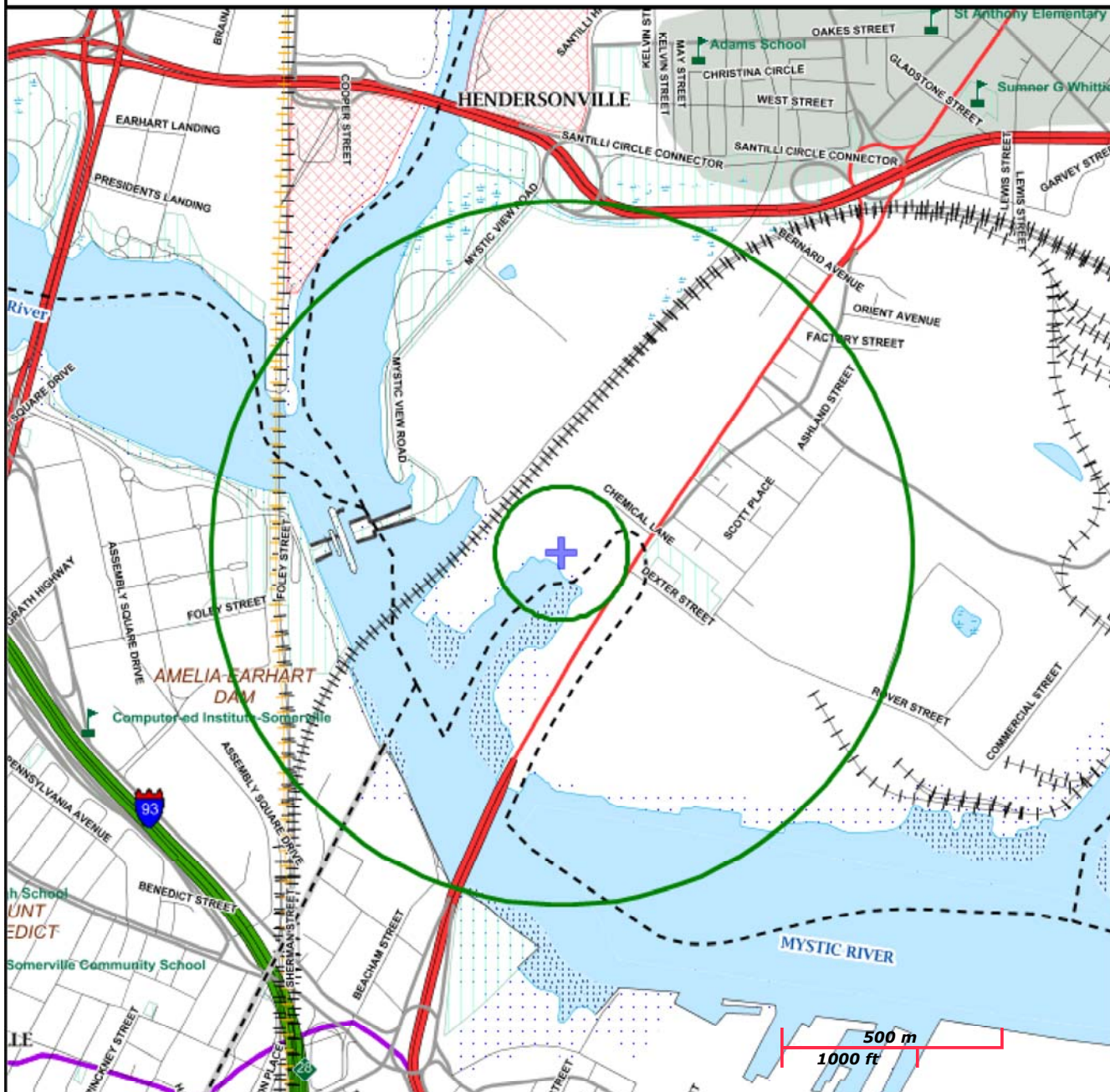
-Critical habitat for the Northern Red-bellied Cooter is present in Plymouth County.

MassDEP - Bureau of Waste Site Cleanup

Site Information:
 1 HORIZON WAY EVERETT, MA
 NAD83 UTM Meters:
 4695665mN, 329686mE (Zone: 19)
 June 6, 2017

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at:
<http://www.mass.gov/mgis/>



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A		
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat		
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam	Wetlands: Freshwater, Saltwater, Cranberry Bog		
Aquifers: Medium Yield, High Yield, EPA Sole Source	FEMA 100yr Floodplain; Protected Open Space; ACEC		
Non Potential Drinking Water Source Area: Medium, High (Yield)	Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential		
	Solid Waste Landfill; PWS: Com. GW, SW, Emerg., Non-Com.		



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>

In Reply Refer To:

June 02, 2017

Consultation Code: 05E1NE00-2017-SLI-1748

Event Code: 05E1NE00-2017-E-03826

Project Name: Wynn Boston Harbor

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-1748

Event Code: 05E1NE00-2017-E-03826

Project Name: Wynn Boston Harbor

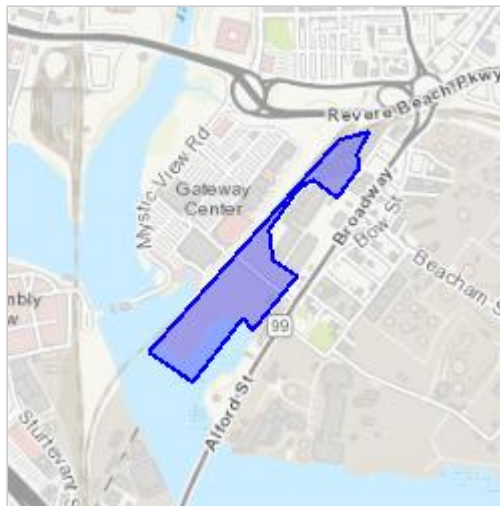
Project Type: DREDGE / EXCAVATION

Project Description: Excavation/ dredging

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/42.39654489081289N71.06880146277295W>



Counties: Middlesex, MA | Suffolk, MA

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Critical habitats

There are no critical habitats within your project area.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

January 20, 2017

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2017)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Maria Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

ATTACHMENT 7

Evaluation of Long-Eared Bat Habitat

One Horizon Way

Everett, Massachusetts

The northern long-eared bat (*Myotis septentrionalis*) has a federal status of Threatened and a state status of Endangered within Massachusetts.

The northern long-eared bat is a migratory species which utilizes a variety of habitats during the year depending on the season. Between early November and April, this species hibernates in crevices in portions of caves and abandoned mine shafts which have high humidity, constant temperatures, and little air flow. Individuals tend to return to the same hibernaculum from year to year although they are also known to sometimes use other hibernacula. Hibernacula are generally located within approximately 35 miles of summer foraging habitat. Between April and October, northern long-eared bats roost and forage in forested areas. Preferred roost sites include clusters of large, live or dead, hardwood trees with cavities or peeling bark. Preferred foraging sites include wooded areas around vernal pools or small ponds or along streams. Thus, transitional zones between forested uplands and wetlands represent prime summer roosting and foraging habitat.

The parcel at 1 Horizon Way in Everett, MA (Site) is located within a busy and densely developed area. The Site is a predominantly open area with few trees and no ponds, vernal pools, caves, or mine shafts. Additionally, there is an active railroad along the northwestern boundary of the Site and a main road, Alford Street, along the southeastern boundary of the Site. The lack of trees for roosting and the regular disturbances from noise from the railroad operation and traffic along Alford Street make this Site a poor habitat for northern long-eared bats. It is unlikely that this species utilizes this area.



Northern Long-Eared Bat

Myotis septentrionalis

The northern long-eared bat is federally listed as a threatened species under the Endangered Species Act. **Endangered** species are animals and plants that are in danger of becoming extinct. **Threatened** species are animals and plants that are likely to become endangered in the foreseeable future. Identifying, protecting and restoring endangered and threatened species is the primary objective of the U.S. Fish and Wildlife Service's Endangered Species Program.

What is the northern long-eared bat?

Appearance: The northern long-eared bat is a medium-sized bat with a body length of 3 to 3.7 inches and a wingspan of 9 to 10 inches. Their fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, *Myotis*.

Winter Habitat: Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. Within hibernacula, surveyors find them hibernating most often in small crevices or cracks, often with only the nose and ears visible.

Summer Habitat: During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. They rarely roost in human structures like barns and sheds.

Reproduction: Breeding begins in late summer or early fall when males begin to swarm near hibernacula. After



This northern long-eared bat, observed during an Illinois mine survey, shows visible symptoms of white-nose syndrome.

copulation, females store sperm during hibernation until spring. In spring, females emerge from their hibernacula, ovulate and the stored sperm fertilizes an egg. This strategy is called delayed fertilization.

After fertilization, pregnant bats migrate to summer areas where they roost in small colonies and give birth to a single pup. Maternity colonies of females and young generally have 30 to 60 bats at the beginning of the summer, although larger maternity colonies have also been observed. Numbers of bats in roosts typically decrease from the time of pregnancy to post-lactation. Most bats within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species' range. Young bats start flying by 18 to 21 days after birth. Maximum lifespan for the northern long-eared bat is estimated to be up to 18.5 years.

Feeding Habits: Like most bats, northern long-eared bats emerge at dusk to feed. They primarily fly through the

understory of forested areas feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation or by gleaning motionless insects from vegetation.

Range: The northern long-eared bat's range includes much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. The species' range includes 37 States and the District of Columbia: Alabama, Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

Why is the northern long-eared bat in trouble?

White-nose Syndrome: No other threat is as severe and immediate as

this. If this disease had not emerged, it is unlikely that northern long-eared bat populations would be experiencing such dramatic declines. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly from the Northeast to the Midwest and Southeast; an area that includes the core of the northern long-eared bat's range, where it was most common before this disease. Numbers of northern long-eared bats (from hibernacula counts) have declined by up to 99 percent in the Northeast. Although there is uncertainty about the rate that white-nose syndrome will spread throughout the species' range, it is expected to continue to spread throughout the United States in the foreseeable future.

Other Sources of Mortality:

Although no significant population declines have been observed due to the sources of mortality listed below, they may now be important factors affecting this bat's viability until we find ways to address WNS.

Impacts to Hibernacula: Gates or other structures intended to exclude people from caves and mines not only restrict bat flight and movement, but also change airflow and microclimates. A change of even a few degrees can make a cave unsuitable for hibernating bats. Also, cave-dwelling bats are vulnerable to human disturbance while hibernating. Arousal during hibernation causes bats to use up their energy stores, which may lead to bats not surviving through winter.

Loss or Degradation of Summer

Habitat: Highway construction, commercial development, surface mining, and wind facility construction permanently remove habitat and are activities prevalent in many areas of this bat's range. Many forest management activities benefit bats by keeping areas forested rather than converted to other uses. But, depending on type and timing, some forest management activities can cause mortality and temporarily remove or degrade roosting and foraging habitat.

Wind Farm Operation: Wind turbines kill bats, and, depending on the species, in very large numbers. Mortality from windmills has been documented for northern long-eared bats, although a

small number have been found to date. However, there are many wind projects within a large portion of the bat's range and many more are planned.

What Is Being Done to Help the Northern Long-Eared Bat?

Disease Management: Actions have been taken to try to reduce or slow the spread of white-nose syndrome through human transmission of the fungus into caves (e.g. cave and mine closures and advisories; national decontamination protocols). A national plan was prepared by the Service and other state and federal agencies that details actions needed to investigate and manage white-nose syndrome. Many state and federal agencies, universities and non-governmental organizations are researching this disease to try to control its spread and address its affect. See www.whitenosesyndrome.org/ for more.

Addressing Wind Turbine

Mortality: The Service and others are working to minimize bat mortality from wind turbines on several fronts. We fund and conduct research to determine why bats are susceptible to turbines, how to operate turbines to minimize mortality and where important bird and bat migration routes are located. The Service, state natural resource agencies, and the wind energy industry are developing a Midwest Wind Energy Habitat Conservation Plan, which will provide wind farms a mechanism to continue operating legally while minimizing and mitigating listed bat mortality.

Listing: The northern long-eared bat is listed as a threatened species under the federal Endangered Species Act. Listing a species affords it the protections of the Act and also increases the priority of the species for funds, grants, and recovery opportunities.

Hibernacula Protection: Many federal and state natural resource agencies and conservation organizations have protected caves and mines that are important hibernacula for cave-dwelling bats.

What Can I Do?

Do Not Disturb Hibernating Bats:

To protect bats and their habitats, comply with all cave and mine closures, advisories, and regulations. In areas without a cave and mine closure policy, follow approved decontamination protocols (see <http://whitenosesyndrome.org/topics/decontamination>). Under no circumstances should clothing, footwear, or equipment that was used in a white-nose syndrome affected state or region be used in unaffected states or regions.

Leave Dead and Dying Trees

Standing: Like most eastern bats, the northern long-eared bat roosts in trees during summer. Where possible and not a safety hazard, leave dead or dying trees on your property. Northern long-eared bats and many other animals use these trees.

Install a Bat Box: Dead and dying trees are usually not left standing, so trees suitable for roosting may be in short supply and bat boxes may provide additional roost sites. Bat boxes are especially needed from April to August when females look for safe and quiet places to give birth and raise their pups.

Support Sustainability: Support efforts in your community, county and state to ensure that sustainability is a development goal. Only through sustainable living will we provide rare and declining species, like the northern long-eared bat, the habitat and resources they need to survive alongside us.

Spread the Word: Understanding the important ecological role that bats play is a key to conserving the northern long-eared and other bats. Helping people learn more about the northern long-eared bat and other endangered species can lead to more effective recovery efforts. For more information, visit www.fws.gov/midwest/nleb and www.whitenosesyndrome.org

Join and Volunteer: Join a conservation group; many have local chapters. Volunteer at a local nature center, zoo, or national wildlife refuge. Many state natural resource agencies benefit greatly from citizen involvement in monitoring wildlife. Check your state agency websites and get involved in citizen science efforts in your area.

Northern Long-Eared Bat (*Myotis septentrionalis*) Species Guidance

Family: Vespertilionidae- the evening bats

State Status: [Threatened](#)

State Rank: [S1S3](#)

Federal Status: [None](#)

Global Rank: [G4](#)

Wildlife Action Plan

Area of Importance Score: [3](#)



Range of the northern long-eared bat in Wisconsin. Source: WI Bat Program 2012



Dave Redell, Wisconsin DNR

Species Information

General Description: The northern long-eared bat, also referred to as the northern bat, is a medium-sized member of the genus *Myotis*. Adults weigh five to nine grams (0.2-0.3 oz). Individual weights vary seasonally and are lowest in the spring as bats emerge from hibernation (WI Bat Program 2010). Total length is 77-92 mm (3.0-3.63 in), adult forearm length is 34-38 mm (1.3-1.5 in), and females are generally larger than males (Kurta 1995). Wingspan is 23-26 cm (9.1-10.2 in; Barbour and Davis 1969). Fur color is light to dark brown. The northern long-eared bat is classified as a cave bat because it uses caves and mines for hibernation.

Similar Species: Three bat species in Wisconsin- the northern long-eared bat, the little brown bat (*Myotis lucifugus*) and the Indiana (*Myotis sodalis*) bat – are best distinguished by close (in-hand) inspection. The northern long-eared bat is most often confused with the little brown bat. The northern long-eared bat has longer ears than the little brown bat, and when folded alongside the head, the tips of the ears should extend 3 mm or more past the tip of the nose. Little brown bat ear length in Wisconsin, however, can be highly variable, and tragus shape and length in relation to the rest of the ear are the two best features to use to distinguish these two species (Fig. 1). The tragus of the northern long-eared bat is more pointed and spear-like than that of the little brown bat. The little brown bat also has a glossier appearance than the northern long-eared. The northern long-eared bat may also be confused with the Indiana bat, but the two can be distinguished much the same way as the little brown bat from the northern long-eared bat. The Indiana bat's keeled calcar, a spur of cartilage extended from the ankle and supporting the interfemoral membrane, is a distinguishing feature that the northern long-eared bat lacks. The northern long-eared bat can be identified by the echolocation call (Fig. 2), however both other *Myotis* species share similar call characteristics, and only trained individuals should positively identify the species through echolocation calls.



Figure 1. The asymmetrical tragus of the little brown bat (left), and the symmetrical, spear-like tragus of the northern long-eared bat (right). Dave Redell, Wisconsin DNR

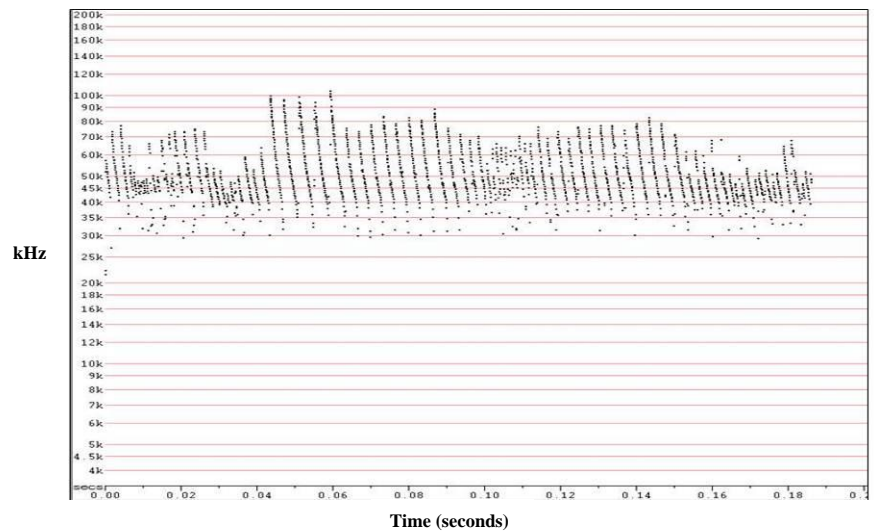


Figure 2. Echolocation call: Northern long-eared bats produce high-frequency calls of a shorter duration, broader bandwidth and lower intensity than other *Myotis* species. The call frequency ranges between 126 and 40 kHz (Caceres and Barclay 2000). The northern long-eared bat sonogram may appear similar to the little brown bat and the Indiana bat.

Associated Species: Northern long-eared bat predators include owls, hawks, occasionally snakes, and raccoons (*Procyon lotor*). As many as 13 feral cats have also been observed congregating at a mine entrance at dusk to prey upon bats as they leave the hibernaculum (D. Redell pers. obs.). Northern long-eared bats often share hibernacula with other bat species such as the tri-colored bat (*Perimyotis subflavus*), the little brown bat, the big brown bat (*Eptesicus fuscus*) and the Indiana bat, but the northern bat rarely, if ever, forms hibernating clusters with other species. Northern long-eared bats forage with other bat species, but there is no evidence of direct competition between species.

State Distribution and Abundance: Northern long-eared bats are found throughout the state of Wisconsin (but see “Threats” section below), but they are never abundant (Jackson 1961, WDNR 2013).

Global Distribution and Abundance: Northern long-eared bats are widely distributed in the eastern United States and Canada, with the exception of the very southeastern United States and Texas (see Fig. 3, BCI 2012).

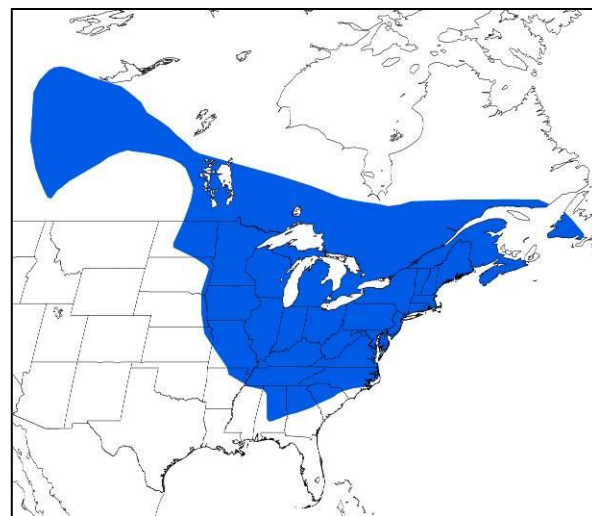
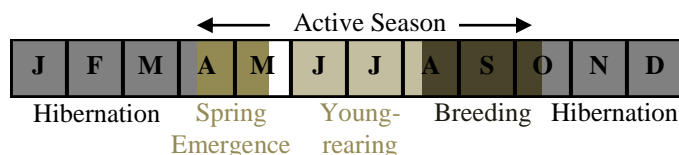


Figure 3. Global distribution of *Myotis septentrionalis*. (BCI 2012)

Diet: The northern long-eared bat is insectivorous and uses echolocation to locate and capture prey. Northern long-eared bat prey includes moths (*Lepidoptera*), flies (*Diptera*) and beetles (*Coleoptera*). This species is commonly referred to as a gleaning bat because it often catches insects that are at rest on leaves or twigs, in addition to catching insects that are flying (Lee and McCracken 2004).

Reproductive Cycle: The reproductive cycle for the northern long-eared bat begins when breeding occurs in the fall and sometimes into winter hibernation. Sperm is stored in the uterus of the female until April or May when the females emerge from hibernation and fertilization occurs. Females form small maternity colonies of up to 30 bats in late spring and females give birth to a single pup in June or early July (Caceres and Barclay 2000, Owen et. al. 2002). Pups are born hairless and flightless. The pup nurses for about a month and is left at the roost nightly while the mother goes out to feed. The pup begins to fly and explore on its own at four to six weeks. Maternity colonies disperse shortly after young are volant (able to fly) and bats move closer to hibernacula in the fall and mate before they hibernate. Young of the year do not usually mate, but some juvenile males appear reproductively active (WI Bat Program 2009, 2010). More research is needed to determine breeding and reproductive behavior of the northern long-eared bat.



Ecology: Female and male northern long-eared bats emerge from hibernation in April and May. In summer, the northern long-eared bat roosts alone, or females may form a colony with some other females. The northern long-eared bat chooses day roosts in tall trees and snags. Night roosts for this species include caves and rock shelters where they will rest between feeding bouts (Caceres and Barclay 2000). Roost fidelity is low in this species, and individual bats switch roosts about every two days in the summer (Foster and Kurta 1999). This species is a relatively long lived mammal for its size, and usually lives up to 8-10 years. Banding records indicated a northern long-eared bat caught in the wild lived up to 18 years (Caceres and Barclay 2000). In the fall, northern long-eared bats will make short migrations from summer habitat to winter hibernacula (caves and abandoned mines), and will often return to the same hibernaculum but not always in sequential seasons (Caceres and Barclay 2000). This species hibernates with other species such as the little brown bat and tri-colored bat, but often in different parts of the hibernaculum. The northern long-eared bat hibernates deep in crevices, rather than clustering on exposed surfaces like other cave bats, which makes it difficult to survey and monitor for this species during the winter (Caceres and Barclay 2000). More research is needed on northern long-eared bats’ basic life history and behavior.

Natural Community Associations: ([WDNR 2005](#) and [WDNR 2009](#))

Many bat species are associated more with structural features within natural communities than with any particular natural community or group of natural communities (see “Habitat” section).

Significant: [coldwater streams](#), [coolwater streams](#), [ephemeral pond](#)

Moderate: alder thicket, bog relict, boreal rich fen, calcareous fen (southern), central sands pine – oak forest, coastal plain marsh, emergent aquatic, floodplain forest, hemlock relict, inland lakes, northern dry forest, northern dry-mesic forest, northern hardwood swamp, northern mesic forest, northern sedge meadow, oak barrens, oak woodland, open bog, shrub carr, southern dry forest, southern

dry-mesic forest, southern hardwood swamp, southern mesic forest, southern sedge meadow, submergent aquatic, submergent aquatic-oligotrophic marsh, warmwater rivers, warmwater streams, white pine – red maple swamp

Minimal: none

Habitat: Northern long-eared bat habitat use changes over the course of the year, and varies based on sex and reproductive status. Reproductive females often use different summer habitat from males and non-reproductive females.

Summer: Northern long-eared bats commonly roost in trees but have been known to roost in man-made structures. This species often roosts under bark or close to the tree trunk in crevices of tree species such as maples and ashes (Foster and Kurta 1999). Northern long-eared bats prefer to roost in tall trees with a dynamic forest structure including old growth and some young trees (Foster and Kurta 1999). Females form small maternity colonies which are located in trees, under shingles, and in buildings. Northern long-eared bats commonly forage within the forest and below the canopy mainly in upland forests on hillsides and ridges (Owen et al. 2003), but have also been noted to forage along paths, ponds and streams, and at forest edges. Foster and Kurta (1999) found all roost trees to be close to wetlands. More information is needed to more fully describe northern long-eared bat foraging habitats and summer roosting in Wisconsin.

Home range: Northern long-eared bats use approximately 150 acres for their home range in summer (Owen et al. 2003). More information is needed to accurately describe northern long-eared bat home range and habitat in Wisconsin.

Winter: The northern long-eared bat hibernates in caves and abandoned mines in winter and tends to be found in deep crevices (Kurta 1994, Caceres and Barclay 2000). More research is needed to determine what characteristics make suitable caves and mines for northern long-eared bat hibernation.



Northern long-eared bat hibernacula in southwestern Wisconsin: Passage of a mine in Grant County that houses northern bats (left), and solitary northern long-eared bat in a crevice in Pierce County (right). Heather Kaarakka, Wisconsin DNR

Edge habitat (transition zone between two types of vegetation) is important for northern long-eared bats as they migrate and forage. When bats migrate from wintering caves to summer habitat or commute from roosts to feeding grounds, they move through the landscape in a manner that protects them from wind and predators. Instead of flying the shortest distance across a field, for instance, bats will take longer routes that follow edge habitat. In addition to offering protection, this behavior may also allow bats more feeding opportunities because food is more abundant around edge habitat (Limpens and Kapteyn 1991). Commuting along edge habitat may assist the bats with navigation and orientation through use of linear edges as landmarks (Verboom and Huitema 1997).

Threats: Lack of information on bat species' basic ecology is one of the greatest threats to bat conservation in Wisconsin. The northern long-eared bat faces two emerging threats, and several ongoing threats. White-nose syndrome (WNS) was discovered in 2006 in a hibernaculum in New York State, and appears as a white, powdery substance on the bat's face, tail and wings. White-nose syndrome has spread rapidly since 2007 to other hibernacula in neighboring states (USFWS 2012). Infected little brown bat and northern bat hibernacula in New York and surrounding states have experienced mortality rates of over 90%. White-nose syndrome has been called the "most precipitous wildlife decline in the past century in North America" (BCI 2009), and is caused by a fungus called *Geomyces destructans* (Lorch et al. 2011). This fungus grows best in the cool, wet conditions of hibernacula (Verant et al. 2012). Mortality from the fungus appears to come from increased arousals during torpor, which deplete bats' fat reserves and cause starvation (Reeder et al. 2012) and dehydration (Cryan et al. 2010). For up-to-date WNS information, see the USFWS WNS website and the USGS National Wildlife Health Center website (see *Additional Information*). Neither the fungus nor the disease has been found in Wisconsin as of this writing. Cave-hibernating bats, including the northern long-eared bat, should be monitored closely for any

indication of WNS; the Wisconsin Bat Program conducts WNS surveillance and monitoring in the state.

Wind power is another emerging threat to bats – wind turbines have been shown to fatally impact all bat species in Wisconsin (Johnson 2003, Arnett et al. 2008). Wind-turbine blades cause mortality through direct impact or through the pressure differential caused by the motion of the spinning blades. This pressure differential causes a bat's lungs to fill with fluid as it flies near the spinning blades, and this phenomenon (known as barotrauma) kills the bat instantly (Baerwald et al. 2008). More research is under way to better understand bat wind-turbine vulnerabilities, but current studies suggest that bats face the greatest risk during migration from summer foraging sites to wintering grounds (tree bats) or hibernacula (cave bats) (Johnson 2003, Kunz et al. 2007). Research is needed on all Wisconsin bat species to better understand wind-turbine mortality in the state and the long term population impacts of turbine-related deaths.

Northern long-eared bats also face the ongoing threat of habitat degradation. Habitat degradation is caused by increased agricultural, industrial, and household pesticide use, and it has negative effects on bats through direct exposure and through dietary accumulation (O'Shea et al. 2001). Pesticides are a threat to many taxa, but bats may be more vulnerable than other small mammals due to certain life characteristics (Shore et al. 1996, O'Shea et al. 2001). Bats' longevity and high trophic level means pesticides can concentrate in their body fat (Clark and Prouty 1977, Clark 1988). Even after pesticide exposure ceases, residues can be passed on to nursing young (Clark 1988). Bat species that migrate long distances may be more affected because pesticide residues become increasingly concentrated in the brain tissue as fat reserves are depleted during long-distance flights. This concentration can lead to convulsions and even death (Geluso et al. 1976, Clark 1978).

Northern long-eared bats also face the ongoing threat of hibernaculum disturbance from humans entering hibernacula in winter and waking bats from torpor. Bats in torpor reduce their metabolism and body temperature to low levels that require less energy than being fully awake. Interrupting torpor costs energy; a little brown bat uses up to 100 mg of fat reserves waking and the returning to torpor (and more if the bat starts flying), or the energetic equivalent of up to 67 days of torpor (Thomas et al. 1990, Thomas 1992). This loss clearly represents a large percentage of total body weight of the bat, and repeated arousals may cause bats to run out of energy reserves before spring arrives and therefore starve in the hibernaculum or die from exposure if they seek food outside (Thomas 1995).

Climate Change Impacts: The effects of climate change on the northern long-eared bat are unclear. Predictions suggest a northward expansion in the ranges of all cave-bat species, in pursuit of optimal hibernation (Humphries et al. 2002, USFWS 2007). This prediction assumes an abundance of suitable caves and other hibernaculum structures further north, but this assumption may not hold for karst-free regions at higher latitudes. Bat species may adapt by reducing torpor depth and duration during winter if prey insect species are available for more of the year (Weller et al. 2009), but bats' adaptive capacities in this regard may be limited and are not well known. Shifts in prey insect emergence may also cause mismatches with bat emergence and cause food shortages in the spring or fall.

Survey Guidelines: Persons handling northern long-eared bats must possess a valid [Endangered and Threatened Species Permit](#). If surveys are being conducted for regulatory purposes, survey protocols and surveyor qualifications must first be approved by the Endangered Resources Review Program (see *Contact Information*).

Acoustic surveys, which should be done by trained individuals, are performed for all Wisconsin bat species in spring, summer, and fall; and are used to determine presence/absence, phenology, and distribution around the state. The Wisconsin Bat Program's eventual goal is to use acoustic survey data to determine bat population trends in Wisconsin. Northern long-eared bats are ubiquitous around the state, and therefore surveys can be done wherever appropriate habitat exists. Acoustic recording systems that detect echolocation calls can survey bats as they fly through an area. The bat detection system detects and records these acoustic signals as bats fly by, and records the date and time of each encounter. The Wisconsin Bat Program currently uses broadband frequency division ultrasound detection equipment with a PDA (Personal Data Assistant) and a Global Positioning System. Start acoustic surveys half an hour after sunset, but only if the daytime temperature exceeds 50° F, and conduct the survey for at least one hour. There are three seasons for acoustic surveys: spring (April and May), summer (June and July), and fall (August and September). Acoustic surveys record bat passes, which can then be identified to species by trained individuals. These surveys could be used by land managers to create inventories of species distribution and relative abundance. Visit the [Wisconsin bat monitoring website](#) for additional information.

Wisconsin DNR also conducts a roost monitoring program to determine abundance of bats roosting in buildings and bat houses. People with bat houses or other roost sites identify species and count bats over the summer at night as bats leave the roost. People who find a bat roost while doing field surveys should contact the [Wisconsin Bat Program](#) to report the information.

Summarize results, including survey dates, times, weather conditions, number of detections, detection locations, and behavioral data and submit via the WDNR online report: <<http://dnr.wi.gov>, keyword "rare animal field report form">

Management Guidelines

The following guidelines typically describe actions that will help maintain or enhance habitat for the species. These actions are not mandatory unless required by a permit, authorization or approval.

Summer Management

Roost availability is thought to limit northern long-eared bat populations, as it does for many bat species, and thus habitat management is important for the continued survival of this species (Duchamp et al. 2007). Northern long-eared bats are forest dwelling bats, and forest management to promote occupation by this species should increase roosting and foraging habitat (see Habitat section above). Northern long-eared bats have been shown to use both live and dead trees for roosting sites (Foster and Kurta 1999). These bats often roost under exfoliating bark, and therefore snags and dying trees may be important for encouraging northern long-eared bats. Forest managers are encouraged to promote mixed-species, mixed-aged plots as the northern long-eared bat chooses trees based on suitability of crevices and bark as roosts, rather than on tree species (Foster and Kurta 1999). The northern long-eared bat is known to switch roost trees frequently (about every 2 days) over the course of the summer, and therefore this species needs a large number of trees (Foster and Kurta 1999). As with many bat species, suitable forested habitat for northern long-eared bats is a multi-species matrix that contains some open areas (Owen et al. 2003).

Linear corridors are important for migrating and commuting bats, and forests may be managed such that suitable foraging habitat is connected by corridors; this may include managing edge habitat along roads, logging trails and riparian habitat. Land managers should also make an effort to reduce or eliminate burdock (*Arctium minus*), an exotic weed that produces seeds that trap bats and cause death from exposure.

Special consideration should be given to protecting snags or dying trees, especially those near known roost locations, particularly from June 1 through August 15 while bats may have pups at the roost.

Seasonal pools in woodlands may be important foraging and water sources for the northern long-eared bat and other Wisconsin bat species because they provide areas for feeding and drinking in an otherwise closed-canopy forest (Francl 2008). Pool size and depth do not appear to determine usage by northern long-eared bats; instead the presence of an opening in the forest is enough to encourage foraging and drinking (Francl 2008).

Fall Management

During fall swarm, large proportions of Wisconsin's cave bat population gather near entrances of the state's hibernacula (see "Habitat" section), and become concentrated and vulnerable to direct impacts. To avoid disturbance during crucial life history events, management activities such as logging and use of heavy machinery within 0.25 miles of hibernacula entrances should be avoided during fall swarm (August 15-October 15) or during spring emergence (April 1-May 15) because bats may use the surrounding area for roosting during those time periods.

Winter Management

Little is known about how northern long-eared bats choose hibernation sites, but suitable Wisconsin hibernacula typically have steady temperatures between 4° C and 12° C (39-53° F), high humidity, and no human disturbance. Artificial sites that can mimic this environment may provide suitable hibernacula. Artificial hibernacula include bunkers, food storage-caves and basements. Contact the [Wisconsin Bat Program](#) to inquire about developing artificial hibernacula.

Natural hibernacula can also be managed to encourage bat use. For example, closing but not sealing the entrance to an abandoned mine not only buffers temperature and humidity, but also reduces disturbance from humans and predators. Eliminating disturbance from humans, except for WNS surveillance, is the best management activity for natural cave hibernacula. Contact the [Wisconsin Bat Program](#) for more information about managing bat hibernacula.

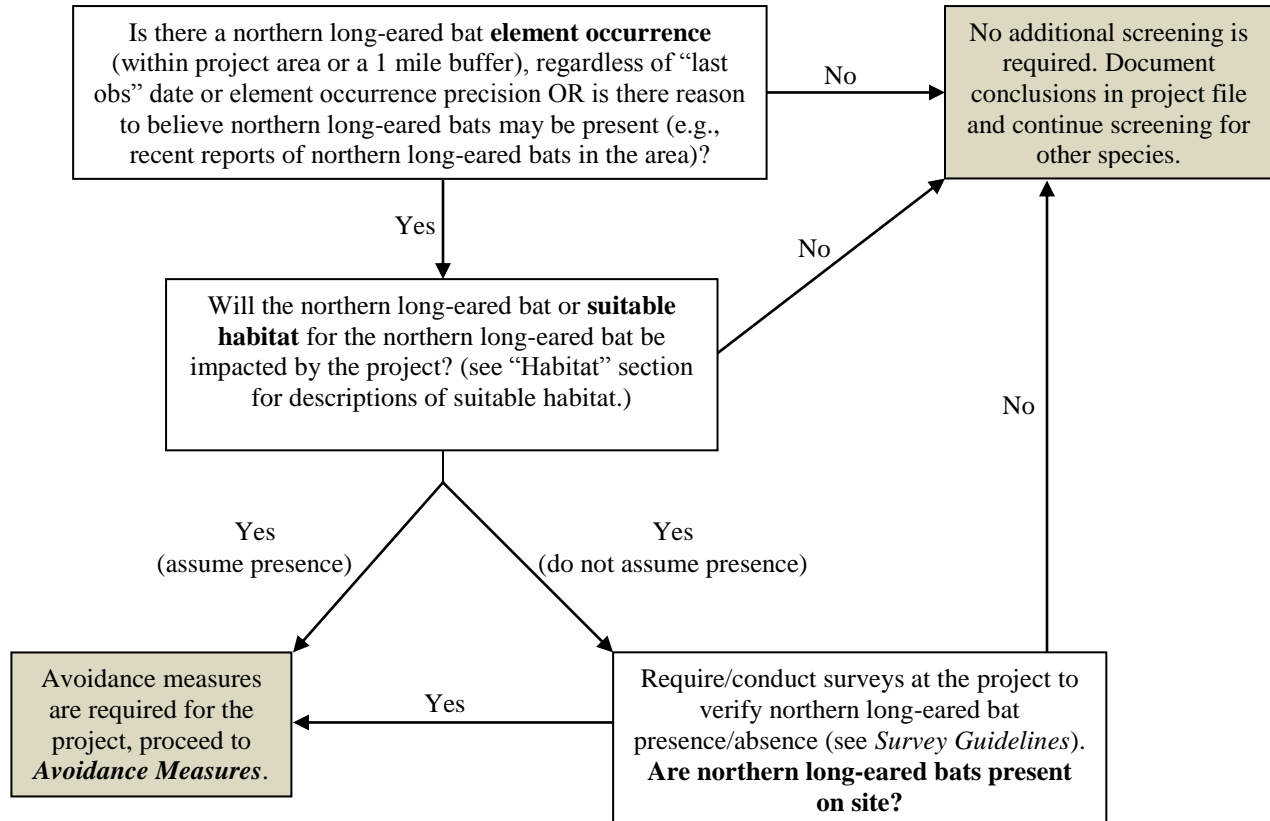
Northern long-eared bats – and their populations as a whole – are particularly vulnerable during winter hibernation because they are concentrated in just a few major hibernacula and because repeated disturbance during hibernation can lead to mortality (see "Threats" section above). Each time a bat is aroused from torpor, it uses up a substantial proportion of the fat reserves it relies on to hibernate through the winter and faces greater odds of starvation before spring (see "Threats" section above). Therefore, avoid entering hibernacula from October 1 through May 15 unless conducting approved and permitted management, surveillance, or research.

Screening Procedures

The following procedures must be followed by DNR staff reviewing proposed projects for potential impacts to the species.

Follow the “Conducting Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff” document (summarized below) to determine if northern long-eared bats will be impacted by a project (WDNR 2012):

Those seeking to complete wind farm projects should review and follow the [Guidance for Minimizing Impacts to Natural Resources from Terrestrial Commercial Wind Energy Development](#) created by the WDNR.



Avoidance Measures

The following measures are specific actions required by DNR to avoid take (mortality) of state threatened or endangered species per Wisconsin’s Endangered Species law (s. 29.604, Wis. Stats.) These guidelines are typically not mandatory for non-listed species (e.g., special concern species) unless required by a permit, authorization or approval.

According to Wisconsin’s Endangered Species Law (s. 29.604, Wis. Stats.), it is illegal to take, transport, possess, process, or sell any wild animal on the Wisconsin Endangered and Threatened Species List (ch. NR 27, Wis. Admin. Code). Take of an animal is defined as shooting, shooting at, pursuing, hunting, catching or killing.

If *Screening Procedures* above indicate that avoidance measures are required for a project, follow the measures below. If you have not yet read through *Screening Procedures*, please review them first to determine if avoidance measures are necessary for the project.

1. The simplest and preferred method to avoid take of northern long-eared bats is to avoid directly impacting individuals, known northern long-eared bat locations, or areas of suitable habitat (described above in the “Habitat” section and in *Screening Procedures*). The U.S. Fish and Wildlife Services identifies humans and their equipment as a possible vectors for spores of *Geomyces destructans* – the fungus that causes white-nose syndrome (WNS) – and therefore simply entering hibernacula at any time of year and moving between them poses threats to bats. Cavers and researchers must observe all cave and mine closures and [decontamination protocols](#) (s. NR 40.07, Wis. Admin. Code; see *Additional Information*). In addition, it is illegal to use pesticides and poisons when attempting to evict bats from house roosts (s. 94.708, Wis. Stats.).

2. If suitable habitat cannot be avoided, follow these time-of-year restrictions to avoid take:

Summer Avoidance (June 1-Aug 15)

Reproductive females and their young are highly vulnerable to mass mortality during the species' maternity period (June 1 – August 15) because they may aggregate in maternity colonies, and because pups cannot fly and therefore cannot leave the roost for several weeks after birth. Maternity colonies may occur in human structures, and those seeking to exclude bats from a building or other roost must follow the [Cave Bat Broad Incidental Take Permit and Authorization](#) (see *Additional Information*).

3. If impacts cannot be avoided during restoration or management activities, including wind projects and forestry management, but activities are covered under the [Cave Bat Broad Incidental Take Permit and Authorization](#); the project is covered for any unintentional take that may occur. For information about natural roost avoidance, see *Management Guidelines* and “Habitat” section above.

4. If northern long-eared bat impacts cannot be avoided, please contact the Natural Heritage Conservation Incidental Take Coordinator (see *Contact Information*) to discuss possible project-specific avoidance measures. If take cannot be avoided, an [Incidental Take Permit or Authorization](#) (see *Additional Information*) is necessary.

Additional Information

References

- Arnett, E. B., W. K. Brown, W.P. Erickson, J. K. Fiedler, B. L. Hamilton, T. H. Henry, A. Jain, G. D. Johnson, J. Kerns, R. R. Koford, C. P. Nicholson, T. G. O’Connell, M. D. Piorkowski, R. D. Tankersley, Jr. 2008. Patterns of Bat Fatalities at Wind Energy Facilities in North America. *Journal Wildlife Management* 72: 61-78.
- Baerwald, E.F., G. H. D’Amours, B. J. Klug, R. M. Barclay. 2008. Barotrauma is a Significant Cause of Bat Fatalities at Wind Turbines. *Current Biology* 18(16).
- Barbour, R.W, and W.H. Davis. 1969 *Bats of America*. The University Press of Kentucky. Lexington, KY.
- Bat Conservation International [BCI]. 2001. *Bats in Eastern Woodlands*.
- Bat Conservation International [BCI]. 2009. “White Nose Syndrome.” <http://batcon.org/index.php/what-we-do/white-nose-syndrome.html> (accessed Dec 2009).
- Bat Conservation International [BCI]. . “Bat Species Profiles: *Myotis septentrionalis*.” Bat Conservation International, 2012. <http://batcon.org/index.php/all-about-bats/species-profiles.html> (accessed Sept 2012).
- Boyles J.G., P.M. Cryan, G.F. McCracken, T.H. Kunz. 2011. Economic importance of bats in agriculture. *Science* 332:41-42.
- Caceres, M. C., R. M. Barclay. 2000. *Myotis septentrionalis*. *Mammalian Species* 634: 1-4
- Clark, D. R. Jr. 1988. Environmental contaminants and the management of bat populations in the United States. Pp. 409-413 in R. C. Szaro, K. S. Severson, and D. R. Patton (eds.), *Proceedings of the Symposium on Management of Amphibians and Reptiles and Small Mammals of North America*, Flagstaff, AZ. USDA Forest Service, General Technical Report RM-166.
- Clark, D. R. Jr., R. K. LaVal, and D. M. Swineford. 1978. Dieldrin-induced mortality in an endangered species, the Gray bat (*Myotis grisescens*). *Science* 199:1357-1359.
- Clark, D. R. Jr. and R. M. Prouty. 1977. Experimental feeding of DDE and PCB to female big brown bats (*Eptesicus fuscus*). *Journal of Toxicology and Environmental health* 2:917-928.
- Cryan, P.M., C.U. Meteyer, J.G. Boyles and D.S Blehert. 2010. Wing pathology of white-nose syndrome in bats suggests life-threatening disruption of physiology. *BMC Biology* 8:135-142.

- Duchamp, J.E., E.B. Arnett, M.A. Larson, R.K. Swihart. 2007. Ecological considerations for landscape-level management of bats. Pp 237-361 in M.J. Lacki, J.P. Hayes, A. Kurta (eds), *Bats in Forests: Conservation and management*. John Hopkins University press. Baltimore, MD.
- Francl, K. E. 2008. Summer bat activity at woodland seasonal pools in the northern Great Lakes region. *Wetlands*. 28: 117-124.
- Foster, R. W., A. Kurta. 1999. Roosting ecology of the northern bat (*Myotis septentrionalis*) and comparisons with the endangered Indiana bat (*Myotis sodalis*). *Journal of Mammalogy* 80: 659-672.
- Geluso, K. N., J. S. Altenbach, and D. E. Wilson. 1976. Bat mortality: Pesticide poisoning and migratory stress. *Science*, 194(4261): 184-186.
- Humphries, M. M., D. W. Thomas, and J. R. Speakman. 2002. Climate-mediated energetic constraints on the distribution of hibernating mammals. *Nature* 418:313-316
- Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. 2006. USFWS. Fort Snelling, Minnesota.
- Jackson, H. *Mammals of Wisconsin*. 1961. The University of Wisconsin Press. Madison, WI.
- Johnson, G. D., W. P. Erickson, M.D. Strickland, M. F. Shepherd, D. A. Shepherd. 2003. Mortality of Bats at a Large-scale wind power development at buffalo ridge, Minnesota. *American Midland Naturalist* 50: 332-342.
- Kunz, T. H., E. B. Arnett, W. P. Erickson, A. R. Hoar, G. D. Johnson, R. P. Larkin, M. D. Strickland, R. W. Thresher, M. D. Tuttle. 2007. Ecological impacts of wind energy development on bats: Questions, research needs, and hypotheses. *Front Ecol. Environment* 5: 315-324.
- Kurta, A. 1995. *Mammals of the great lakes region*. Ann Arbor: University of Michigan Press.
- Lacki, M. J., J. P. Hayes, A. Kurta. *Bats in Forests: Conservation and management*. Baltimore: John Hopkins University Press, 2007. Pp 250.
- Lee, Y. F., G. F. McCracken. 2004. Flight activity and food habits of three species of *Myotis* bats (Chiroptera: Vespertilionidae) in sympatry. *Zoological Studies* 43: 589-597.
- Limpens, H., K. Kapteyn. 1991. Bats, their behavior and linear landscape elements. *Myotis* 29: 39-48.
- Lorch, J.M., C.U. Meteyer, M.J. Behr, J.G. Boyles, P.M. Cryan, A.C.Hicks, A.E.Ballmann, J.T.H. Coleman, D.N.Redell, D.M.Reeder and D.S.Blehert. 2011 Experimental infection of bats with *Geomyces destructans* causes white-nose syndrome. *Nature* 480:376-378.
- Nowak, R. M. *Walker's bats of the world*. Baltimore: John Hopkins University Press, 1991.
- O'Shea, T. J., A. L. Everette, and L. E. Ellison. 2001. Cyclodiene Insecticide, DDE, DDT, Arsenic, and Mercury contamination of big brown bats (*Eptesicus fuscus*) foraging at a Colorado superfund site. *Archives of Environmental Contamination and Toxicology* 40:112-120.
- Owen, S. F., M. Menzel, W. M. Ford, B. R. Chapman, K. V. Miller, J. W. Edwards, P. B. Wood. 2002. Roost tree selection by maternity colonies of northern long-eared myotis in an intensively managed forest. Gen. Tech. Rep. NE-292. Newtown Square, PA: U.S. Department of Agriculture, Forest service, Northeastern Research Station. 6 p.
- Owen, S. F., M. Menzel, W. M. Ford, B. R. Chapman, K. V. Miller, J. W. Edwards, P. B. Wood. 2003. Home-range size and habitat used by the northern *Myotis* (*Myotis septentrionalis*). *American Midland Naturalist* 150:352-359.

- Reeder, D., C.L. Frank, G.G. Turner, C.U. Meteyer, A. Kurta, E.R. Britzke, M.E. Vodzak, S.R. Darling, C.W. Stihler, A.C. Hicks, R. Jacob, L.E. Grieneisen, S.A. Brownlee, L.K. Muller, D.S. Blehert. 2012. Frequent arousal from hibernation linked to severity of infection and mortality in bats with White-nose syndrome. *PLoS ONE* 7: e38920. doi:10.1371/journal.pone.0038920.
- Redell, D. 2005. Behavioral ecology of bats using the Neda mine hibernaculum. Thesis: University of Wisconsin, Madison.
- Shore, R. F., D. G. Myhill, and J. A. Wright. 1996. Comparison of the toxicity to laboratory mice and pipistrelle bats *Pipistrellus pipistrellus* of exposure to remedially-treated timber. *Environmental Toxicology and Pharmacology* 2:125-129.
- Thomas D. W. 1992. Lack of evidence for a biological alarm clock in bats (*Myotis* spp.) hibernating under natural conditions. *Canadian Journal of Zoology* 71:1-3.
- Thomas D. W., M. Dorais, J. M. Bergeron. 1990. Winter energy budget and costs of arousals for hibernating little brown bats, *Myotis lucifugus*. *Journal Mammalogy* 71: 475-479.
- USFWS [United States Fish and Wildlife Service]. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. <http://www.fws.gov/midwest/endangered/mammals/inba/pdf/inba_fldrftrecpln_apr07.pdf>
- USFWS [US Fish and Wildlife Service]. “White nose syndrome in bats: Frequently asked questions” *US Fish and Wildlife Service Northeast Region*. April 2009. USFWS. <<http://www.fws.gov/northeast/pdf/white-nosefaqs.pdf>> (accessed Oct 2009).
- USFWS [US Fish and Wildlife Service]. “White nose syndrome in bats: for cavers” *US Fish and Wildlife Services Northeast Region*. November 2009. USFWS. <<http://whitenosesyndrome.org/resources/cavers>> (accessed Dec 2009).
- Verboom, B., H. Huitema. 1997. The Importance of linear landscapes for the pipistrelle *Pipistrellus pipistrellus* and the serotine bat *Eptesicus serotinus*. *Landscape Ecology* 12: 117-125.
- Verant, M.L., J.G. Boyles, W.W. Waldrep Jr, G. Wibbelt, D.S. Blehert. 2012. Temperature-dependant growth of *Geomyces destructans*, the fungus that causes bat white-nose syndrome. *PLoS ONE* 7: e46280. doi:10.1371/journal.pone.0046280
- Weller, T. J., P. M. Cryan, and T. J. O’Shea. 2009. Broadening the focus of bat conservation and research in the USA for the 21st century. *Endangered Species Research* 8:129-145.
- Wisconsin Bat Program. 2008, 2009, 2010, 2012. Unpublished Data.
- WDNR [Wisconsin Department of Natural Resources]. 2005. Wisconsin’s Strategy for Wildlife Species of Greatest Conservation Need: A State Wildlife Action Plan. Madison, Wisconsin, USA. <<http://dnr.wi.gov>, key word “Wildlife Action Plan”>
- WDNR [Wisconsin Department of Natural Resources]. 2009. Wisconsin wildlife action plan species profile: Northern Long-eared Bat. (accessed May 27, 2012). Madison, Wisconsin, USA. <material now available on the Natural Heritage Conservation species Web page: <http://dnr.wi.gov>, key word “biodiversity”>
- WDNR [Wisconsin Department of Natural Resources]. 2012. Conducting Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff. Bureau of Endangered Resources. Wisconsin Department of Natural Resources, Madison, Wisconsin.
- WDNR [Wisconsin Department of Natural Resources]. 2013. Natural Heritage Inventory database. Accessed 29 July 2013.
- WICCI [Wisconsin Initiative on Climate Change Impacts]. 2011. Wisconsin’s Changing Climate: Impacts and Adaptation. Nelson Institute for Environmental Studies, University of Wisconsin-Madison and the Wisconsin Department of Natural Resources, Madison, Wisconsin, USA. <http://www.wicci.wisc.edu/report/2011_WICCI-Report.pdf>

Linked Websites:

- Cave bat Broad Incidental Take Permit and Authorization:< <http://dnr.wi.gov/topic/erreview/itbats.html>>
- Natural Communities of Wisconsin: <<http://dnr.wi.gov/org/land/er/communities/>>
- Natural Heritage Conservation Permit Requirements: <<http://dnr.wi.gov/topic/EndangeredResources/permits.html>>

- Rare Animal Field Report Form: <<http://dnr.wi.gov>, key word “rare animal field report form”>
- USFW WNS Website: <<http://www.whitenosesyndrome.org>>
- USGS National Wildlife Health Center: <http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/>
- Wind Guidance: <<http://dnr.wi.gov/topic/Sectors/documents/energy/WindGuidelines.pdf>>
- Wisconsin Bat Program Exclusion Instructions: <<http://wiatri.net/inventory/bats/Monitoring/Roosts/docs/BatExclusion.pdf>>
- Wisconsin Bat Program: <<http://wiatri.net/inventory/bats>>
- WDNR Decontamination Protocols for Preventing Spread of White-nose syndrome: <http://dnr.wi.gov/topic/WildlifeHabitat/documents/WNS_DeconProtocols.pdf>
- Wisconsin Endangered and Threatened Species: <<http://dnr.wi.gov>, key word “endangered resources”>
- Wisconsin Endangered and Threatened Species Permit: <<http://dnr.wi.gov>, key word “endangered species permit”>
- Wisconsin Initiative on Climate Change Impacts: <<http://www.wicci.wisc.edu/>>
- Wisconsin Natural Heritage Inventory Working List Key: <<http://dnr.wi.gov/topic/NHI/WList.html>>
- Wisconsin’s Wildlife Action Plan: <<http://dnr.wi.gov/topic/wildlifehabitat/actionplan.html>>

Funding

- Natural Resources Foundation of Wisconsin: <<http://www.wisconservation.org/>>
- USFWS State Wildlife Grants Program: <<http://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm>>
- Wisconsin Natural Heritage Conservation Fund
- Wisconsin DNR Division of Forestry

Endangered Resources Review Program Contacts

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Summary of Essential Fish Habitat (EFH) Designations

Name of Estuary/ Bay/ River: Boston Harbor, Massachusetts

10' x 10' latitude and longitude squares included in this bay or estuary or river (southeast corner boundaries):

4220/7100; 4210/7050; 4210/7100

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Atlantic salmon (<i>Salmo salar</i>)					
Atlantic cod (<i>Gadus morhua</i>)	S	S	M,S	M,S	S
haddock (<i>Melanogrammus aeglefinus</i>)	S	S			
pollock (<i>Pollachius virens</i>)	S	S	M,S		
whiting (<i>Merluccius bilinearis</i>)	S	S	M,S	M,S	
offshore hake (<i>Merluccius albidus</i>)					
red hake (<i>Urophycis chuss</i>)		S	S	S	
white hake (<i>Urophycis tenuis</i>)	S	S	S	S	
redfish (<i>Sebastes fasciatus</i>)	n/a				
witch flounder (<i>Glyptocephalus cynoglossus</i>)					
winter flounder (<i>Pleuronectes americanus</i>)	M,S	M,S	M,S	M,S	M,S
yellowtail flounder (<i>Pleuronectes ferruginea</i>)	S	S	S	S	S
windowpane flounder (<i>Scopthalmus aquosus</i>)	M,S	M,S	M,S	M,S	M,S
American plaice (<i>Hippoglossoides platessoides</i>)	S	S	S	S	S
ocean pout (<i>Macrozoarces americanus</i>)			S	S	
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	S	S	S	S	S
Atlantic sea scallop (<i>Placopecten magellanicus</i>)					
Atlantic sea herring (<i>Clupea harengus</i>)		S	M,S	M,S	
monkfish (<i>Lophius americanus</i>)					
bluefish (<i>Pomatomus saltatrix</i>)			M,S	M,S	
long finned squid (<i>Loligo pealei</i>)	n/a	n/a			
short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a			

Atlantic butterfish (<i>Peprilus triacanthus</i>)	S	S			
Atlantic mackerel (<i>Scomber scombrus</i>)	M,S	M,S	M,S	M,S	
summer flounder (<i>Paralichthys dentatus</i>)					
scup (<i>Stenotomus chrysops</i>)					
black sea bass (<i>Centropristus striata</i>)					
surf clam (<i>Spisula solidissima</i>)	n/a	n/a			
ocean quahog (<i>Artica islandica</i>)	n/a	n/a			
spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a			
tilefish (<i>Lopholatilus chamaeleonticeps</i>)					



Attachment 8: MHC Report

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Everett; Street No: 1; Street Name: chemical Ln;

Inv. No.	Property Name	Street	Town	Year
----------	---------------	--------	------	------



Attachment 9: WQBEL Calculation Spreadsheet

Enter number values in green boxes below

Enter values in the units specified



0	Q_R = Enter upstream flow in MGD
0.72	Q_P = Enter discharge flow in MGD
0	Downstream 7Q10

Enter a dilution factor, if other than zero



0

Enter values in the units specified



0	C_d = Enter influent hardness in mg/L CaCO_3
0	C_s = Enter receiving water hardness in mg/L CaCO_3

Enter **receiving water** concentrations in the units specified



7.7	pH in Standard Units
15.73	Temperature in °C
0.135	Ammonia in mg/L
0	Hardness in mg/L CaCO_3
7.7	Salinity in ppt
0	Antimony in µg/L
1.89	Arsenic in µg/L
0	Cadmium in µg/L
0	Chromium III in µg/L
0	Chromium VI in µg/L
4.66	Copper in µg/L
362	Iron in µg/L
7.33	Lead in µg/L
0	Mercury in µg/L
0	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
0	Zinc in µg/L

Enter **influent** concentrations in the units specified

↓

0	TRC in µg/L
0	Ammonia in mg/L
0	Antimony in µg/L
323	Arsenic in µg/L
1.8	Cadmium in µg/L
0	Chromium III in µg/L
0	Chromium VI in µg/L
49.6	Copper in µg/L
333000	Iron in µg/L
22.3	Lead in µg/L
0	Mercury in µg/L
58.1	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
694	Zinc in µg/L
113	Cyanide in µg/L
0	Phenol in µg/L
0	Carbon Tetrachloride in µg/L
0	Tetrachloroethylene in µg/L
0	Total Phthalates in µg/L
0	Diethylhexylphthalate in µg/L
0	Benzo(a)anthracene in µg/L
0	Benzo(a)pyrene in µg/L
0	Benzo(b)fluoranthene in µg/L
0	Benzo(k)fluoranthene in µg/L
0	Chrysene in µg/L
0	Dibenzo(a,h)anthracene in µg/L
0	Indeno(1,2,3-cd)pyrene in µg/L
0	Methyl-tert butyl ether in µg/L

Dilution Factor

0.0

A. Inorganics

TBEL applies if bolded

WQBEL applies if bolded

Ammonia	Report	mg/L	---	
Chloride	Report	µg/L	---	
Total Residual Chlorine	0.2	mg/L	7.5	µg/L
Total Suspended Solids	30	mg/L	---	
Antimony	206	µg/L	640	µg/L
Arsenic	104	µg/L	36	µg/L
Cadmium	10.2	µg/L	8.9	µg/L
Chromium III	323	µg/L	100.0	µg/L
Chromium VI	323	µg/L	50	µg/L
Copper	242	µg/L	3.7	µg/L
Iron	5000	µg/L	---	µg/L
Lead	160	µg/L	8.5	µg/L
Mercury	0.739	µg/L	1.11	µg/L
Nickel	1450	µg/L	8.3	µg/L
Selenium	235.8	µg/L	71	µg/L
Silver	35.1	µg/L	2.2	µg/L
Zinc	420	µg/L	86	µg/L
Cyanide	178	mg/L	1.0	µg/L
B. Non-Halogenated VOCs				
Total BTEX	100	µg/L	---	
Benzene	5.0	µg/L	---	
1,4 Dioxane	200	µg/L	---	
Acetone	7.97	mg/L	---	
Phenol	1,080	µg/L	300	µg/L
C. Halogenated VOCs				
Carbon Tetrachloride	4.4		1.6	µg/L
1,2 Dichlorobenzene	600	µg/L	---	
1,3 Dichlorobenzene	320	µg/L	---	
1,4 Dichlorobenzene	5.0	µg/L	---	
Total dichlorobenzene	---	µg/L	---	
1,1 Dichloroethane	70	µg/L	---	
1,2 Dichloroethane	5.0	µg/L	---	
1,1 Dichloroethylene	3.2	µg/L	---	
Ethylene Dibromide	0.05	µg/L	---	
Methylene Chloride	4.6	µg/L	---	
1,1,1 Trichloroethane	200	µg/L	---	
1,1,2 Trichloroethane	5.0	µg/L	---	
Trichloroethylene	5.0	µg/L	---	
Tetrachloroethylene	5.0	µg/L	3.3	µg/L
cis-1,2 Dichloroethylene	70	µg/L	---	

Vinyl Chloride	2.0	µg/L	---	
D. Non-Halogenated SVOCs				
Total Phthalates	190	µg/L	---	µg/L
Diethylhexyl phthalate	101	µg/L	2.2	µg/L
Total Group I Polycyclic Aromatic Hydrocarbons	1.0	µg/L	---	
Benzo(a)anthracene	1.0	µg/L	0.0038	µg/L
Benzo(a)pyrene	1.0	µg/L	0.0038	µg/L
Benzo(b)fluoranthene	1.0	µg/L	0.0038	µg/L
Benzo(k)fluoranthene	1.0	µg/L	0.0038	µg/L
Chrysene	1.0	µg/L	0.0038	µg/L
Dibenzo(a,h)anthracene	1.0	µg/L	0.0038	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	0.0038	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	100	µg/L	---	
Naphthalene	20	µg/L	---	
E. Halogenated SVOCs				
Total Polychlorinated Biphenyls	0.000064	µg/L	---	
Pentachlorophenol	1.0	µg/L	---	
F. Fuels Parameters				
Total Petroleum Hydrocarbons	5.0	mg/L	---	
Ethanol	Report	mg/L	---	
Methyl-tert-Butyl Ether	70	µg/L	20	µg/L
tert-Butyl Alcohol	120	µg/L	---	
tert-Amyl Methyl Ether	90	µg/L	---	



Attachment 10: City of Everett Notification



Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

249 Vanderbilt Avenue
Norwood, MA 02062
T: 781.278.3700
F: 781.278.5701
F: 781.278.5702
www.gza.com



Notification of Discharge under the 2016 Remediation General Permit

July 6, 2017
GZA File No. 01.0171521.52

Mr. Carlo DeMaria
City of Everett Mayor
484 Broadway
Everett, Massachusetts 02149

Re: Notification of Discharge under 2017 Remediation General Permit
Wynn Boston Harbor
One Horizon Way
Everett, Massachusetts

Dear Mr. DeMaria:

Federal National Pollutant Discharge Elimination System (NPDES) regulations require operators of discharges permitted under the 2017 Remediation General Permit (RGP) jointly administered by the United States Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MassDEP), to notify the municipality of said discharge. These notice requirements are contained in Part 3.4(7)(a) of the 2017 RGP. An electronic version of the 2017 RGP is available at <https://www3.epa.gov/region1/npdes/rgp.html>. In compliance with these requirements, GZA GeoEnvironmental, Inc. (GZA), on behalf of Wynn MA, LLC, is notifying the City of Everett of the discharge of treated water derived from the dewatering of excavations from the property located at One Horizon Way, in Everett Massachusetts.

A copy of the Notice of Intent (NOI) submitted to USEPA can be made available upon request.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Matt Smith, PE., LSP.
Associate Principal

J:\170,000-179,999\171521\171521-12.DEL\RGP\Revised RGP\Attachment 10- Notice to City of Everett\City of Everett Notification.docx



Attachment 11: Laboratory Analytical Reports



CERTIFICATE OF ANALYSIS

David E Leone
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.12)
ESS Laboratory Work Order Number: 1501022

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 5:18 pm, Jan 28, 2015

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 NELAC Standards, A2LA 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: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

SAMPLE RECEIPT

The following samples were received on January 05, 2015 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES).

All sample for Hexavalent Chromium and TRC were received outside of the holding time.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1501022-01	GZ-003	Ground Water	1664A, 2320B, 2540C, 2540D, 300.0, 353.2, 420.1, 4500 CN CE, 4500-CI E, 5220D, 6010B, 6010C, 7010, 7196A, 7470A, 8011, 8082A, 8260B, 8270D, 8270D SIM, 9014, 9030A, 9038, HACH
1501022-02	GZ-005	Ground Water	1664A, 2320B, 2540C, 2540D, 300.0, 353.2, 420.1, 4500 CN CE, 4500-CI E, 5220D, 6010B, 6010C, 7010, 7196A, 7470A, 8011, 8082A, 8260B, 8270D, 8270D SIM, 9014, 9030A, 9038, HACH
1501022-03	GZ-006	Ground Water	1664A, 2320B, 2540C, 2540D, 300.0, 353.2, 420.1, 4500 CN CE, 4500-CI E, 5220D, 6010B, 6010C, 7010, 7196A, 7470A, 8011, 8082A, 8260B, 8270D, 8270D SIM, 9014, 9030A, 9038, HACH
1501022-04	GZ-010	Ground Water	6010C, 7010, 7196A, 7470A, HACH



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

PROJECT NARRATIVE

8270C(SIM) Polynuclear Aromatic Hydrocarbons

- CA50616-BLK1 Surrogate recovery(ies) above upper control limit (S+).
2,4,6-Tribromophenol (152% @ 15-110%)
- CA50616-BS1 Surrogate recovery(ies) above upper control limit (S+).
2,4,6-Tribromophenol (161% @ 15-110%)
- CA50616-BSD1 Surrogate recovery(ies) above upper control limit (S+).
2,4,6-Tribromophenol (124% @ 15-110%)
- CYA0050-CCV1 Continuing Calibration recovery is above upper control limit (C+).
2,4,6-Tribromophenol (155% @ 70-130%)

Classical Chemistry

- 1501022-01 Estimated value. Sample hold times were exceeded (H).
Dissolved Ferrous Iron , Ferrous Iron , Hexavalent Chromium , Nitrate as N , Nitrite as N
- 1501022-01 The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
- 1501022-02 Estimated value. Sample hold times were exceeded (H).
Dissolved Ferrous Iron , Ferrous Iron , Hexavalent Chromium , Nitrate as N , Nitrite as N
- 1501022-02 The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
- 1501022-03 Estimated value. Sample hold times were exceeded (H).
Dissolved Ferrous Iron , Ferrous Iron , Hexavalent Chromium , Nitrate as N , Nitrite as N
- 1501022-03 The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
- 1501022-04 Estimated value. Sample hold times were exceeded (H).
Dissolved Ferrous Iron , Ferrous Iron , Hexavalent Chromium

Total Metals

- CA50618-BSD1 Blank Spike recovery is above upper control limit (B+).
Cadmium (128% @ 80-120%)
- CA50618-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
Cadmium (24% @ 20%)

No other observations noted.

End of Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

DATA USABILITY LINKS

- [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](#)

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
- 8015D - 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 / VPH

Prep Methods

- 3005A - Aqueous ICP and Graphite Furnace Digestion
- 3020A - Aqueous 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
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	804 (10.0)		6010C		1	KJK	01/06/15 18:42	100	20	CA50618
Iron	42300 (20.0)		6010C		1	JP	01/06/15 18:42	100	20	CA50618
Lead	ND (4.0)		6010C		1	KJK	01/06/15 18:42	100	20	CA50618
Nickel	22.3 (10.0)		6010C		1	KJK	01/06/15 18:42	100	20	CA50618
Zinc	1170 (10.0)		6010C		1	KJK	01/06/15 18:42	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Antimony	ND (1.0)		7010		1	KJK	01/07/15 0:22	100	20	CA50618
Arsenic	782 (100)		7010		100	KJK	01/08/15 15:00	100	20	CA50618
Cadmium	3.5 (2.0)		7010		20	KJK	01/09/15 17:18	100	20	CA50618
Chromium	2.4 (2.0)		6010C		1	KJK	01/06/15 18:05	100	20	CA50618
Chromium III	ND (10)		6010C		1	EEM	01/06/15 18:05	1	1	[CALC]
Copper	29.8 (4.0)		6010C		1	KJK	01/06/15 18:05	100	20	CA50618
Iron	47900 (20.0)		6010C		1	KJK	01/23/15 20:39	100	20	CA50618
Lead	ND (8.0)		7010		20	KJK	01/10/15 0:08	100	20	CA50618
Mercury	ND (0.20)		7470A		1	BJV	01/06/15 14:05	20	40	CA50505
Nickel	21.7 (4.0)		6010C		1	KJK	01/06/15 18:05	100	20	CA50618
Selenium	ND (40.0)		7010		20	KJK	01/10/15 2:11	100	20	CA50618
Silver	ND (0.2)		7010		1	KJK	01/06/15 17:33	100	20	CA50618
Zinc	1130 (10.0)		6010C		1	KJK	01/06/15 18:05	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: [CALC]

Total Metals Aqueous

<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>
Hardness	497 (0.7)		6010B		5	KJK	01/07/15 1:06	1	1	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 1/6/15 10:20
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1221	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1232	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1242	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1248	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1254	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1260	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1262	ND (0.09)		8082A		1	01/06/15 13:49		CA50525
Aroclor 1268	ND (0.09)		8082A		1	01/06/15 13:49		CA50525

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	70 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	56 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	53 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	48 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1-Trichloroethane	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,1,2-Trichloroethane	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,1-Dichloroethane	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,1-Dichloroethene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,2-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,2-Dichloroethane	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,3-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
1,4-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Acetone	ND (10.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Benzene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Carbon Tetrachloride	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Ethylbenzene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Methylene Chloride	ND (2.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Naphthalene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Tertiary-butyl Alcohol	ND (25.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Tetrachloroethene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Toluene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Trichloroethene	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Vinyl Chloride	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Xylene O	ND (1.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539
Xylene P,M	ND (2.0)		8260B		1	01/05/15 22:00	CYA0036	CA50539

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>102 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>85 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>97 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>98 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/7/15 19:05

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	ND (0.2)		8270D		1	01/08/15 23:27	CYA0083	CA50710
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		78 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/6/15 13:02

8270C(SIM) Polynuclear Aromatic Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Acenaphthene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Acenaphthylene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Anthracene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Benzo(g,h,i)perylene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
bis(2-Ethylhexyl)phthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Butylbenzylphthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Chrysene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Diethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Dimethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Di-n-butylphthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Di-n-octylphthalate	ND (2.34)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Fluoranthene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Fluorene	0.21 (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Naphthalene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Pentachlorophenol	ND (0.84)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Phenanthrene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616
Pyrene	ND (0.19)		8270D SIM		1	01/07/15 19:48	CYA0050	CA50616

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	53 %		30-130
<i>Surrogate: 2,4,6-Tribromophenol</i>	86 %		15-110
<i>Surrogate: 2-Fluorobiphenyl</i>	83 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	76 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	97 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Alkalinity as CaCO3	ND (2)		2320B		1	MJV	01/06/15 10:39	mg/L	CA50630
Chemical Oxygen Demand	25 (10)		5220D		1	EEM	01/07/15 11:30	mg/L	CA50726
Chloride	191 (25.0)		300.0		50	JLK	01/07/15 19:19	mg/L	CA50730
Dissolved Ferric Iron	ND (5000)		6010C		100	JP	01/06/15 18:42	ug/L	[CALC]
Dissolved Ferrous Iron	H 59500 (5000)		HACH		100	EEM	01/05/15 17:35	ug/L	CA50537
Ferric Iron	ND (5020)		HACH		100	KJK	01/23/15 20:39	ug/L	[CALC]
Ferrous Iron	H 60100 (5000)		HACH		100	EEM	01/05/15 17:35	ug/L	CA50537
Free Cyanide	ND (5)		9014		1	EEM	01/09/15 16:35	ug/L	CA50926
Hexavalent Chromium	H ND (10)		7196A		1	EEM	01/05/15 17:05	ug/L	CA50510
Nitrate as N	H ND (0.030)		353.2		1	JLK	01/06/15 10:10	mg/L	[CALC]
Nitrite as N	H ND (0.010)		353.2		1	JLK	01/06/15 9:30	mg/L	CA50601
Phenols	ND (100)		420.1		1	EEM	01/07/15 13:30	ug/L	CA50729
Sulfate	285 (125)		9038		25	JLK	01/09/15 12:20	mg/L	CA50923
Sulfide	ND (0.05)	0.01	9030A		1	JLK	01/08/15 12:50	mg/L	CA50830
Total Cyanide (LL)	ND (5.0)		4500 CN CE		1	JLK	01/09/15 11:37	ug/L	CA50920
Total Dissolved Solids	1440 (10)		2540C		1	JLK	01/06/15 16:18	mg/L	CA50606
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/06/15 11:29	mg/L	CA50626
Total Residual Chlorine	ND (10)		4500-Cl E		1	EEM	01/05/15 17:10	ug/L	CA50538
Total Suspended Solids	ND (5)		2540D		1	JLK	01/06/15 16:03	mg/L	CA50605



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-003
Date Sampled: 01/02/15 10:18
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: ML
Prepared: 1/6/15 14:45

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

<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>Sequence</u>	<u>Batch</u>
1,2-Dibromoethane	ND (0.015)		8011		1	ML	01/06/15 16:54		CA50632
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>					
<i>Surrogate: Pentachloroethane</i>		<i>89 %</i>		<i>30-150</i>					



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	ND (5.0)		7010		5	KJK	01/13/15 19:57	100	20	CA50618
Iron	1760 (20.0)		6010C		1	JP	01/06/15 18:48	100	20	CA50618
Lead	ND (12.0)		6010C		3	KJK	01/07/15 16:49	100	20	CA50618
Nickel	ND (10.0)		6010C		1	KJK	01/06/15 18:48	100	20	CA50618
Zinc	17.9 (10.0)		6010C		1	KJK	01/06/15 18:48	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Antimony	ND (1.0)		7010		1	KJK	01/07/15 0:28	100	20	CA50618
Arsenic	ND (20.0)		7010		20	KJK	01/08/15 15:06	100	20	CA50618
Cadmium	ND (2.0)		7010		20	KJK	01/09/15 17:13	100	20	CA50618
Chromium	2.7 (2.0)		6010C		1	KJK	01/06/15 18:11	100	20	CA50618
Chromium III	ND (10)		6010C		1	EEM	01/06/15 18:11	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	01/06/15 18:11	100	20	CA50618
Iron	3980 (40.0)		6010C		2	KJK	01/23/15 20:45	100	20	CA50618
Lead	ND (8.0)		7010		20	KJK	01/10/15 0:13	100	20	CA50618
Mercury	ND (0.20)		7470A		1	BJV	01/06/15 14:07	20	40	CA50505
Nickel	9.6 (4.0)		6010C		1	KJK	01/06/15 18:11	100	20	CA50618
Selenium	ND (40.0)		7010		20	KJK	01/10/15 2:22	100	20	CA50618
Silver	ND (1.0)		7010		5	KJK	01/06/15 19:00	100	20	CA50618
Zinc	25.6 (10.0)		6010C		1	KJK	01/06/15 18:11	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: [CALC]

Total Metals Aqueous

<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>
Hardness	3810 (2.6)		6010B		10	KJK	01/07/15 1:10	1	1	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 1/6/15 10:20
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1221	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1232	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1242	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1248	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1254	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1260	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1262	ND (0.09)		8082A		1	01/06/15 14:08		CA50525
Aroclor 1268	ND (0.09)		8082A		1	01/06/15 14:08		CA50525

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	<i>87 %</i>		<i>30-150</i>
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>90 %</i>		<i>30-150</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>44 %</i>		<i>30-150</i>
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>42 %</i>		<i>30-150</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1-Trichloroethane	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,1,2-Trichloroethane	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,1-Dichloroethane	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,1-Dichloroethene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,2-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,2-Dichloroethane	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,3-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
1,4-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Acetone	ND (10.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Benzene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Carbon Tetrachloride	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Ethylbenzene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Methylene Chloride	ND (2.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Naphthalene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Tertiary-butyl Alcohol	ND (25.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Tetrachloroethene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Toluene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Trichloroethene	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Vinyl Chloride	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Xylene O	ND (1.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539
Xylene P,M	ND (2.0)		8260B		1	01/05/15 22:33	CYA0036	CA50539

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>97 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>83 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>95 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>101 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: GZ-005
 Date Sampled: 01/02/15 13:40
 Percent Solids: N/A
 Initial Volume: 1070
 Final Volume: 1
 Extraction Method: 3520C

ESS Laboratory Work Order: 1501022
 ESS Laboratory Sample ID: 1501022-02
 Sample Matrix: Ground Water
 Units: ug/L
 Analyst: VSC
 Prepared: 1/7/15 19:05

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.3 (0.2)		8270D		1	01/09/15 0:17	CYA0083	CA50710
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		85 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/6/15 13:02

8270C(SIM) Polynuclear Aromatic Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Acenaphthene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Acenaphthylene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Anthracene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Benzo(g,h,i)perylene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
bis(2-Ethylhexyl)phthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Butylbenzylphthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Chrysene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Diethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Dimethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Di-n-butylphthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Di-n-octylphthalate	ND (2.34)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Fluoranthene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Fluorene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Naphthalene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Pentachlorophenol	ND (0.84)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Phenanthrene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616
Pyrene	ND (0.19)		8270D SIM		1	01/07/15 20:37	CYA0050	CA50616

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>45 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>68 %</i>		<i>15-110</i>
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74 %</i>		<i>30-130</i>
<i>Surrogate: Nitrobenzene-d5</i>	<i>62 %</i>		<i>30-130</i>
<i>Surrogate: p-Terphenyl-d14</i>	<i>86 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Alkalinity as CaCO3	340 (50)		2320B		1	MJV	01/06/15 10:39	mg/L	CA50630
Chemical Oxygen Demand	567 (100)		5220D		1	EEM	01/07/15 11:30	mg/L	CA50725
Chloride	7260 (1000)		300.0		2000	JLK	01/10/15 15:24	mg/L	CA51006
Dissolved Ferric Iron	ND (1250)		6010C		25	JP	01/06/15 18:48	ug/L	[CALC]
Dissolved Ferrous Iron	H 4550 (1250)		HACH		25	EEM	01/05/15 17:35	ug/L	CA50537
Ferric Iron	ND (1290)		HACH		25	KJK	01/23/15 20:45	ug/L	[CALC]
Ferrous Iron	H 4770 (1250)		HACH		25	EEM	01/05/15 17:35	ug/L	CA50537
Free Cyanide	ND (5)		9014		1	EEM	01/09/15 16:35	ug/L	CA50926
Hexavalent Chromium	H ND (10)		7196A		1	EEM	01/05/15 17:05	ug/L	CA50510
Nitrate as N	H ND (0.030)		353.2		1	JLK	01/06/15 10:11	mg/L	[CALC]
Nitrite as N	H 0.013 (0.010)		353.2		1	JLK	01/06/15 9:31	mg/L	CA50601
Phenols	ND (100)		420.1		1	EEM	01/07/15 13:30	ug/L	CA50729
Sulfate	1050 (250)		9038		50	JLK	01/09/15 12:20	mg/L	CA50923
Sulfide	ND (0.05)	0.01	9030A		1	JLK	01/08/15 12:50	mg/L	CA50830
Total Cyanide (LL)	109 (5.0)		4500 CN CE		1	JLK	01/09/15 11:37	ug/L	CA50920
Total Dissolved Solids	8760 (10)		2540C		1	JLK	01/06/15 16:18	mg/L	CA50606
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/06/15 11:29	mg/L	CA50626
Total Residual Chlorine	ND (10)		4500-Cl E		1	EEM	01/05/15 17:10	ug/L	CA50538
Total Suspended Solids	18 (5)		2540D		1	JLK	01/06/15 16:03	mg/L	CA50605



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-005
Date Sampled: 01/02/15 13:40
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: ML
Prepared: 1/6/15 14:45

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

<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>Sequence</u>	<u>Batch</u>
1,2-Dibromoethane	ND (0.015)		8011		1	ML	01/06/15 17:32		CA50632
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>					
<i>Surrogate: Pentachloroethane</i>		91 %		30-150					



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	15.9 (5.0)		7010		5	KJK	01/10/15 18:00	100	20	CA50618
Iron	2000 (20.0)		6010C		1	JP	01/06/15 18:53	100	20	CA50618
Lead	ND (12.0)		6010C		3	KJK	01/07/15 16:55	100	20	CA50618
Nickel	ND (10.0)		6010C		1	KJK	01/06/15 18:53	100	20	CA50618
Zinc	15.7 (10.0)		6010C		1	KJK	01/06/15 18:53	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Antimony	ND (1.0)		7010		1	KJK	01/07/15 0:33	100	20	CA50618
Arsenic	13.3 (5.0)		7010		5	KJK	01/07/15 3:51	100	20	CA50618
Cadmium	ND (0.5)		7010		5	KJK	01/09/15 17:41	100	20	CA50618
Chromium	ND (2.0)		6010C		1	KJK	01/06/15 18:16	100	20	CA50618
Chromium III	ND (10)		6010C		1	EEM	01/06/15 18:16	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	01/06/15 18:16	100	20	CA50618
Iron	3080 (20.0)		6010C		1	KJK	01/23/15 20:51	100	20	CA50618
Lead	ND (8.0)		7010		20	KJK	01/10/15 0:19	100	20	CA50618
Mercury	ND (0.20)		7470A		1	BJV	01/06/15 14:14	20	40	CA50505
Nickel	ND (4.0)		6010C		1	KJK	01/06/15 18:16	100	20	CA50618
Selenium	ND (40.0)		7010		20	KJK	01/10/15 2:28	100	20	CA50618
Silver	ND (0.4)		7010		2	KJK	01/06/15 18:54	100	20	CA50618
Zinc	15.9 (10.0)		6010C		1	KJK	01/06/15 18:16	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: mg/L

Extraction Method: [CALC]

Total Metals Aqueous

<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>
Hardness	2760 (2.6)		6010B		10	KJK	01/07/15 1:33	1	1	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 1/6/15 10:20
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Aroclor 1016	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1221	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1232	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1242	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1248	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1254	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1260	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1262	ND (0.09)		8082A		1	01/06/15 14:27		CA50525
Aroclor 1268	ND (0.09)		8082A		1	01/06/15 14:27		CA50525

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	<i>96 %</i>		<i>30-150</i>
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>98 %</i>		<i>30-150</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>60 %</i>		<i>30-150</i>
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>63 %</i>		<i>30-150</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1-Trichloroethane	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,1,2-Trichloroethane	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,1-Dichloroethane	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,1-Dichloroethene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,2-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,2-Dichloroethane	11.0 (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,3-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
1,4-Dichlorobenzene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Acetone	ND (10.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Benzene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Carbon Tetrachloride	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
cis-1,2-Dichloroethene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Ethylbenzene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Methyl tert-Butyl Ether	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Methylene Chloride	ND (2.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Naphthalene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Tertiary-amyl methyl ether	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Tertiary-butyl Alcohol	ND (25.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Tetrachloroethene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Toluene	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Trichloroethene	4.0 (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Vinyl Chloride	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Xylene O	ND (1.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539
Xylene P,M	ND (2.0)		8260B		1	01/05/15 23:05	CYA0036	CA50539

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>83 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>96 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>98 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/7/15 19:05

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	1.1 (0.2)		8270D		1	01/09/15 1:06	CYA0083	CA50710
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		<i>87 %</i>		<i>15-115</i>				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/6/15 13:02

8270C(SIM) Polynuclear Aromatic Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Acenaphthene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Acenaphthylene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Anthracene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Benzo(a)anthracene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Benzo(a)pyrene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Benzo(b)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Benzo(g,h,i)perylene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Benzo(k)fluoranthene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
bis(2-Ethylhexyl)phthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Butylbenzylphthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Chrysene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Dibenzo(a,h)Anthracene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Diethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Dimethylphthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Di-n-butylphthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Di-n-octylphthalate	ND (2.34)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Fluoranthene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Fluorene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Indeno(1,2,3-cd)Pyrene	ND (0.05)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Naphthalene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Pentachlorophenol	ND (0.84)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Phenanthrene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616
Pyrene	ND (0.19)		8270D SIM		1	01/07/15 21:27	CYA0050	CA50616

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>51 %</i>		<i>30-130</i>
<i>Surrogate: 2,4,6-Tribromophenol</i>	<i>79 %</i>		<i>15-110</i>
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>83 %</i>		<i>30-130</i>
<i>Surrogate: Nitrobenzene-d5</i>	<i>78 %</i>		<i>30-130</i>
<i>Surrogate: p-Terphenyl-d14</i>	<i>96 %</i>		<i>30-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Alkalinity as CaCO ₃	420 (50)		2320B		1	MJV	01/06/15 10:39	mg/L	CA50630
Chemical Oxygen Demand	146 (100)		5220D		1	EEM	01/07/15 11:30	mg/L	CA50725
Chloride	6000 (1000)		300.0		2000	JLK	01/10/15 15:40	mg/L	CA51006
Dissolved Ferric Iron	ND (250)		6010C		5	JP	01/06/15 18:53	ug/L	[CALC]
Dissolved Ferrous Iron	H 2730 (250)		HACH		5	EEM	01/05/15 17:35	ug/L	CA50537
Ferric Iron	326 (270)		HACH		5	KJK	01/23/15 20:51	ug/L	[CALC]
Ferrous Iron	H 2760 (250)		HACH		5	EEM	01/05/15 17:35	ug/L	CA50537
Free Cyanide	ND (5)		9014		1	EEM	01/09/15 16:35	ug/L	CA50926
Hexavalent Chromium	H ND (10)		7196A		1	EEM	01/05/15 17:05	ug/L	CA50510
Nitrate as N	H ND (0.030)		353.2		1	JLK	01/06/15 10:12	mg/L	[CALC]
Nitrite as N	H ND (0.010)		353.2		1	JLK	01/06/15 9:32	mg/L	CA50601
Phenols	ND (100)		420.1		1	EEM	01/07/15 13:30	ug/L	CA50729
Sulfate	936 (250)		9038		50	JLK	01/09/15 12:20	mg/L	CA50923
Sulfide	ND (0.05)	0.01	9030A		1	JLK	01/08/15 12:50	mg/L	CA50830
Total Cyanide (LL)	ND (5.0)		4500 CN CE		1	JLK	01/09/15 11:37	ug/L	CA50920
Total Dissolved Solids	12500 (10)		2540C		1	JLK	01/06/15 16:18	mg/L	CA50606
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/06/15 11:29	mg/L	CA50626
Total Residual Chlorine	ND (10)		4500-Cl E		1	EEM	01/05/15 17:10	ug/L	CA50538
Total Suspended Solids	28 (5)		2540D		1	JLK	01/06/15 16:03	mg/L	CA50605



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-006
Date Sampled: 01/02/15 13:37
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: ML
Prepared: 1/6/15 14:45

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

<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>Sequence</u>	<u>Batch</u>
1,2-Dibromoethane	ND (0.015)		8011		1	ML	01/06/15 18:09		CA50632
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>					
<i>Surrogate: Pentachloroethane</i>		<i>90 %</i>		<i>30-150</i>					



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-010
Date Sampled: 01/02/15 16:38
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-04
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	390 (10.0)		6010C		1	KJK	01/06/15 18:59	100	20	CA50618
Iron	162000 (20.0)		6010C		1	JP	01/06/15 18:59	100	20	CA50618
Lead	7.3 (4.0)		6010C		1	KJK	01/06/15 18:59	100	20	CA50618
Nickel	14.1 (10.0)		6010C		1	KJK	01/06/15 18:59	100	20	CA50618
Zinc	422 (10.0)		6010C		1	KJK	01/06/15 18:59	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-010
Date Sampled: 01/02/15 16:38
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-04
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Antimony	ND (1.0)		7010		1	KJK	01/07/15 0:51	100	20	CA50618
Arsenic	352 (100)		7010		100	KJK	01/08/15 16:15	100	20	CA50618
Cadmium	ND (1.0)		7010		10	KJK	01/09/15 17:30	100	20	CA50618
Chromium	16.1 (2.0)		6010C		1	KJK	01/06/15 18:22	100	20	CA50618
Chromium III	16 (10)		6010C		1	EEM	01/06/15 18:22	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	01/06/15 18:22	100	20	CA50618
Iron	164000 (20.0)		6010C		1	KJK	01/23/15 21:18	100	20	CA50618
Lead	6.4 (4.0)		6010C		1	KJK	01/06/15 18:22	100	20	CA50618
Mercury	ND (0.20)		7470A		1	BJV	01/06/15 14:16	20	40	CA50505
Nickel	11.6 (4.0)		6010C		1	KJK	01/06/15 18:22	100	20	CA50618
Selenium	ND (40.0)		7010		20	KJK	01/10/15 2:34	100	20	CA50618
Silver	ND (0.2)		7010		1	KJK	01/06/15 18:31	100	20	CA50618
Zinc	301 (10.0)		6010C		1	KJK	01/06/15 18:22	100	20	CA50618



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-010
Date Sampled: 01/02/15 16:38
Percent Solids: N/A

ESS Laboratory Work Order: 1501022
ESS Laboratory Sample ID: 1501022-04
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Dissolved Ferric Iron	ND (12500)		6010C		250	JP	01/06/15 18:59	ug/L	[CALC]
Dissolved Ferrous Iron	H 170000 (12500)		HACH		250	EEM	01/05/15 17:35	ug/L	CA50537
Ferric Iron	ND (12500)		HACH		250	KJK	01/23/15 21:18	ug/L	[CALC]
Ferrous Iron	H 170000 (12500)		HACH		250	EEM	01/05/15 17:35	ug/L	CA50537
Hexavalent Chromium	H ND (10)		7196A		1	EEM	01/05/15 17:05	ug/L	CA50510



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Dissolved Metals

Batch CA50618 - 3005A/200.7

Blank

Arsenic	ND	50.0	ug/L							
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Blank

Arsenic	ND	10.0	ug/L							
Arsenic	ND	1.0	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	4.0	ug/L							
Nickel	ND	10.0	ug/L							
Zinc	ND	10.0	ug/L							

LCS

Arsenic	449	100	ug/L	500.0	90	80-120				
Arsenic	460	50.0	ug/L	500.0	92	80-120				
Iron	2220	100	ug/L	2500	89	80-120				
Lead	468	20.0	ug/L	500.0	94	80-120				
Nickel	467	50.0	ug/L	500.0	93	80-120				
Zinc	472	50.0	ug/L	500.0	94	80-120				

LCS Dup

Arsenic	478	50.0	ug/L	500.0	96	80-120	4	20		
Arsenic	464	100	ug/L	500.0	93	80-120	3	20		
Iron	2350	100	ug/L	2500	94	80-120	5	20		
Lead	490	20.0	ug/L	500.0	98	80-120	5	20		
Nickel	486	50.0	ug/L	500.0	97	80-120	4	20		
Zinc	493	50.0	ug/L	500.0	99	80-120	4	20		

Total Metals

Batch CA50505 - 245.1/7470A

Blank

Mercury	ND	0.20	ug/L							
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LCS

Mercury	6.09	0.20	ug/L	6.000	102	80-120				
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LCS Dup

Mercury	6.05	0.20	ug/L	6.000	101	80-120	0.6	20		
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Reference

Mercury	5.32	0.20	ug/L	6.000	89	0-200				
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Reference

Mercury	5.35	0.20	ug/L	6.000	89	0-200				
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Reference

Mercury	5.48	0.20	ug/L	6.000	91	0-200				
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Reference

Mercury	5.41	0.20	ug/L	6.000	90	0-200				
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Batch CA50618 - 3005A/200.7

Blank



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CA50618 - 3005A/200.7

Iron	ND	100	ug/L							
Blank										
Antimony	ND	1.0	ug/L							
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.1	ug/L							
Calcium	ND	40.0	ug/L							
Chromium	ND	2.0	ug/L							
Copper	ND	4.0	ug/L							
Iron	ND	20.0	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	4.0	ug/L							
Lead	ND	0.4	ug/L							
Magnesium	ND	40.0	ug/L							
Nickel	ND	4.0	ug/L							
Selenium	ND	2.0	ug/L							
Silver	ND	0.2	ug/L							
Zinc	ND	10.0	ug/L							

LCS

Antimony	572	100	ug/L	500.0	114	80-120				
Arsenic	489	100	ug/L	500.0	98	80-120				
Cadmium	253	250	ug/L	250.0	101	80-120				
Calcium	4780	200	ug/L	5000	96	80-120				
Chromium	463	10.0	ug/L	500.0	93	80-120				
Copper	469	20.0	ug/L	500.0	94	80-120				
Iron	2220	100	ug/L	2500	89	80-120				
Iron	2220	100	ug/L	2500	89	80-120				
Lead	468	20.0	ug/L	500.0	94	80-120				
Lead	508	40.0	ug/L	500.0	102	80-120				
Magnesium	4710	200	ug/L	5000	94	80-120				
Nickel	467	20.0	ug/L	500.0	93	80-120				
Selenium	960	200	ug/L	1000	96	80-120				
Silver	227	100	ug/L	250.0	91	80-120				
Zinc	472	50.0	ug/L	500.0	94	80-120				

LCS Dup

Antimony	586	100	ug/L	500.0	117	80-120	2	20		
Arsenic	581	100	ug/L	500.0	116	80-120	17	20		
Cadmium	321	250	ug/L	250.0	128	80-120	24	20		B++
Calcium	4960	200	ug/L	5000	99	80-120	4	20		
Chromium	484	10.0	ug/L	500.0	97	80-120	4	20		
Copper	494	20.0	ug/L	500.0	99	80-120	5	20		
Iron	2350	100	ug/L	2500	94	80-120	5	20		
Iron	2350	100	ug/L	2500	94	80-120	5	20		
Lead	490	20.0	ug/L	500.0	98	80-120	5	20		
Lead	506	40.0	ug/L	500.0	101	80-120	0.3	20		
Magnesium	5020	200	ug/L	5000	100	80-120	6	20		



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CA50618 - 3005A/200.7

Nickel	486	20.0	ug/L	500.0		97	80-120	4	20	
Selenium	980	200	ug/L	1000		98	80-120	2	20	
Silver	233	100	ug/L	250.0		93	80-120	2	20	
Zinc	493	50.0	ug/L	500.0		99	80-120	4	20	

8082A Polychlorinated Biphenyls (PCB)

Batch CA50525 - 3510C

Blank

Aroclor 1016	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1232	ND	0.10	ug/L							
Aroclor 1242	ND	0.10	ug/L							
Aroclor 1248	ND	0.10	ug/L							
Aroclor 1254	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							

Surrogate: Decachlorobiphenyl	0.0480		ug/L	0.05000		96	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0540		ug/L	0.05000		108	30-150			
Surrogate: Tetrachloro-m-xylene	0.0277		ug/L	0.05000		55	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0308		ug/L	0.05000		62	30-150			

LCS

Aroclor 1016	0.80	0.10	ug/L	1.000		80	40-140			
Aroclor 1260	0.94	0.10	ug/L	1.000		94	40-140			

Surrogate: Decachlorobiphenyl	0.0520		ug/L	0.05000		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0534		ug/L	0.05000		107	30-150			
Surrogate: Tetrachloro-m-xylene	0.0294		ug/L	0.05000		59	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0304		ug/L	0.05000		61	30-150			

LCS Dup

Aroclor 1016	0.87	0.10	ug/L	1.000		87	40-140	8	20	
Aroclor 1260	0.97	0.10	ug/L	1.000		97	40-140	2	20	

Surrogate: Decachlorobiphenyl	0.0510		ug/L	0.05000		102	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0541		ug/L	0.05000		108	30-150			
Surrogate: Tetrachloro-m-xylene	0.0315		ug/L	0.05000		63	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0314		ug/L	0.05000		63	30-150			

8260B Volatile Organic Compounds

Batch CA50539 - 5030B

Blank

1,1,1-Trichloroethane	ND	1.0	ug/L							
1,1,2-Trichloroethane	ND	1.0	ug/L							
1,1-Dichloroethane	ND	1.0	ug/L							



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CA50539 - 5030B

1,1-Dichloroethene	ND	1.0	ug/L							
1,2-Dichlorobenzene	ND	1.0	ug/L							
1,2-Dichloroethane	ND	1.0	ug/L							
1,3-Dichlorobenzene	ND	1.0	ug/L							
1,4-Dichlorobenzene	ND	1.0	ug/L							
Acetone	ND	10.0	ug/L							
Benzene	ND	1.0	ug/L							
Carbon Tetrachloride	ND	1.0	ug/L							
cis-1,2-Dichloroethene	ND	1.0	ug/L							
Ethylbenzene	ND	1.0	ug/L							
Methyl tert-Butyl Ether	ND	1.0	ug/L							
Methylene Chloride	ND	2.0	ug/L							
Naphthalene	ND	1.0	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tertiary-butyl Alcohol	ND	25.0	ug/L							
Tetrachloroethene	ND	1.0	ug/L							
Toluene	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Vinyl Chloride	ND	1.0	ug/L							
Xylene O	ND	1.0	ug/L							
Xylene P,M	ND	2.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	24.0		ug/L	25.00		96	70-130			
Surrogate: 4-Bromofluorobenzene	20.4		ug/L	25.00		82	70-130			
Surrogate: Dibromofluoromethane	22.9		ug/L	25.00		92	70-130			
Surrogate: Toluene-d8	25.0		ug/L	25.00		100	70-130			

LCS

1,1,1-Trichloroethane	10.2		ug/L	10.00		102	70-130			
1,1,2-Trichloroethane	9.7		ug/L	10.00		97	70-130			
1,1-Dichloroethane	9.3		ug/L	10.00		93	70-130			
1,1-Dichloroethene	8.9		ug/L	10.00		89	70-130			
1,2-Dichlorobenzene	9.5		ug/L	10.00		95	70-130			
1,2-Dichloroethane	10.0		ug/L	10.00		100	70-130			
1,3-Dichlorobenzene	9.5		ug/L	10.00		95	70-130			
1,4-Dichlorobenzene	9.8		ug/L	10.00		98	70-130			
Acetone	59.4		ug/L	50.00		119	70-130			
Benzene	9.6		ug/L	10.00		96	70-130			
Carbon Tetrachloride	10.7		ug/L	10.00		107	70-130			
cis-1,2-Dichloroethene	9.5		ug/L	10.00		95	70-130			
Ethylbenzene	9.8		ug/L	10.00		98	70-130			
Methyl tert-Butyl Ether	9.4		ug/L	10.00		94	70-130			
Methylene Chloride	10.0		ug/L	10.00		100	70-130			
Naphthalene	8.1		ug/L	10.00		81	70-130			
Tertiary-amyl methyl ether	9.1		ug/L	10.00		91	70-130			
Tertiary-butyl Alcohol	50.8		ug/L	50.00		102	70-130			
Tetrachloroethene	7.8		ug/L	10.00		78	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CA50539 - 5030B

Toluene	10.2		ug/L	10.00		102	70-130			
Trichloroethene	9.7		ug/L	10.00		97	70-130			
Vinyl Chloride	10.3		ug/L	10.00		103	70-130			
Xylene O	10.0		ug/L	10.00		100	70-130			
Xylene P,M	19.5		ug/L	20.00		97	70-130			
Surrogate: 1,2-Dichloroethane-d4	26.0		ug/L	25.00		104	70-130			
Surrogate: 4-Bromofluorobenzene	24.5		ug/L	25.00		98	70-130			
Surrogate: Dibromofluoromethane	25.1		ug/L	25.00		101	70-130			
Surrogate: Toluene-d8	25.0		ug/L	25.00		100	70-130			

LCS Dup

1,1,1-Trichloroethane	10.3		ug/L	10.00		103	70-130	2	25	
1,1,2-Trichloroethane	9.9		ug/L	10.00		99	70-130	2	25	
1,1-Dichloroethane	9.7		ug/L	10.00		97	70-130	4	25	
1,1-Dichloroethene	9.4		ug/L	10.00		94	70-130	5	25	
1,2-Dichlorobenzene	10.3		ug/L	10.00		103	70-130	8	25	
1,2-Dichloroethane	9.9		ug/L	10.00		99	70-130	0.3	25	
1,3-Dichlorobenzene	10.6		ug/L	10.00		106	70-130	11	25	
1,4-Dichlorobenzene	10.8		ug/L	10.00		108	70-130	10	25	
Acetone	51.4		ug/L	50.00		103	70-130	14	25	
Benzene	10.2		ug/L	10.00		102	70-130	5	25	
Carbon Tetrachloride	11.1		ug/L	10.00		111	70-130	3	25	
cis-1,2-Dichloroethene	10.0		ug/L	10.00		100	70-130	5	25	
Ethylbenzene	10.0		ug/L	10.00		100	70-130	2	25	
Methyl tert-Butyl Ether	9.8		ug/L	10.00		98	70-130	4	25	
Methylene Chloride	10.1		ug/L	10.00		101	70-130	0.8	25	
Naphthalene	8.6		ug/L	10.00		86	70-130	6	25	
Tertiary-amyl methyl ether	9.4		ug/L	10.00		94	70-130	3	25	
Tertiary-butyl Alcohol	56.4		ug/L	50.00		113	70-130	10	25	
Tetrachloroethene	8.2		ug/L	10.00		82	70-130	5	25	
Toluene	10.4		ug/L	10.00		104	70-130	3	25	
Trichloroethene	10.0		ug/L	10.00		100	70-130	3	25	
Vinyl Chloride	10.4		ug/L	10.00		104	70-130	2	25	
Xylene O	10.2		ug/L	10.00		102	70-130	2	25	
Xylene P,M	20.2		ug/L	20.00		101	70-130	4	25	
Surrogate: 1,2-Dichloroethane-d4	25.0		ug/L	25.00		100	70-130			
Surrogate: 4-Bromofluorobenzene	24.3		ug/L	25.00		97	70-130			
Surrogate: Dibromofluoromethane	24.6		ug/L	25.00		98	70-130			
Surrogate: Toluene-d8	24.9		ug/L	25.00		99	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CA50710 - 3520C

Blank										
1,4-Dioxane	ND	0.2	ug/L							
Surrogate: 1,4-Dioxane-d8	4.11		ug/L	5.000		82	15-115			

LCS



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CA50710 - 3520C

1,4-Dioxane	7.2	0.2	ug/L	10.00		72	40-140			
Surrogate: 1,4-Dioxane-d8	4.02		ug/L	5.000		80	15-115			

LCS Dup

1,4-Dioxane	7.1	0.2	ug/L	10.00		71	40-140	2	20	
Surrogate: 1,4-Dioxane-d8	4.52		ug/L	5.000		90	15-115			

8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CA50616 - 3510C

Blank

Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
bis(2-Ethylhexyl)phthalate	ND	2.50	ug/L							
Butylbenzylphthalate	ND	2.50	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	ND	2.50	ug/L							
Di-n-octylphthalate	ND	2.50	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Pentachlorophenol	ND	0.90	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	1.38		ug/L	2.500		55	30-130			
Surrogate: 2,4,6-Tribromophenol	5.69		ug/L	3.750		152	15-110			S+
Surrogate: 2-Fluorobiphenyl	2.18		ug/L	2.500		87	30-130			
Surrogate: Nitrobenzene-d5	1.93		ug/L	2.500		77	30-130			
Surrogate: p-Terphenyl-d14	2.23		ug/L	2.500		89	30-130			

LCS

Acenaphthene	3.04	0.20	ug/L	4.000		76	40-140			
Acenaphthylene	2.86	0.20	ug/L	4.000		71	40-140			
Anthracene	2.99	0.20	ug/L	4.000		75	40-140			
Benzo(a)anthracene	3.06	0.05	ug/L	4.000		77	40-140			
Benzo(a)pyrene	3.15	0.05	ug/L	4.000		79	40-140			
Benzo(b)fluoranthene	3.12	0.05	ug/L	4.000		78	40-140			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CA50616 - 3510C

Benzo(g,h,i)perylene	3.34	0.20	ug/L	4.000		83	40-140			
Benzo(k)fluoranthene	3.13	0.05	ug/L	4.000		78	40-140			
bis(2-Ethylhexyl)phthalate	3.49	2.50	ug/L	4.000		87	40-140			
Butylbenzylphthalate	3.35	2.50	ug/L	4.000		84	40-140			
Chrysene	3.20	0.05	ug/L	4.000		80	40-140			
Dibenzo(a,h)Anthracene	3.35	0.05	ug/L	4.000		84	40-140			
Diethylphthalate	3.49	2.50	ug/L	4.000		87	40-140			
Dimethylphthalate	3.46	2.50	ug/L	4.000		87	40-140			
Di-n-butylphthalate	2.94	2.50	ug/L	4.000		74	40-140			
Di-n-octylphthalate	3.01	2.50	ug/L	4.000		75	40-140			
Fluoranthene	3.09	0.20	ug/L	4.000		77	40-140			
Fluorene	3.27	0.20	ug/L	4.000		82	40-140			
Indeno(1,2,3-cd)Pyrene	3.38	0.05	ug/L	4.000		85	40-140			
Naphthalene	1.98	0.20	ug/L	4.000		50	40-140			
Pentachlorophenol	3.91	0.90	ug/L	4.000		98	30-130			
Phenanthrene	2.96	0.20	ug/L	4.000		74	40-140			
Pyrene	3.25	0.20	ug/L	4.000		81	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	1.31		ug/L	2.500		52	30-130			
Surrogate: 2,4,6-Tribromophenol	6.05		ug/L	3.750		161	15-110			S+
Surrogate: 2-Fluorobiphenyl	2.18		ug/L	2.500		87	30-130			
Surrogate: Nitrobenzene-d5	2.03		ug/L	2.500		81	30-130			
Surrogate: p-Terphenyl-d14	2.57		ug/L	2.500		103	30-130			

LCS Dup

Acenaphthene	2.90	0.20	ug/L	4.000		72	40-140	5	20	
Acenaphthylene	2.78	0.20	ug/L	4.000		69	40-140	3	20	
Anthracene	2.93	0.20	ug/L	4.000		73	40-140	2	20	
Benzo(a)anthracene	2.88	0.05	ug/L	4.000		72	40-140	6	20	
Benzo(a)pyrene	3.12	0.05	ug/L	4.000		78	40-140	1	20	
Benzo(b)fluoranthene	3.16	0.05	ug/L	4.000		79	40-140	1	20	
Benzo(g,h,i)perylene	3.25	0.20	ug/L	4.000		81	40-140	3	20	
Benzo(k)fluoranthene	2.98	0.05	ug/L	4.000		74	40-140	5	20	
bis(2-Ethylhexyl)phthalate	3.45	2.50	ug/L	4.000		86	40-140	1	20	
Butylbenzylphthalate	3.18	2.50	ug/L	4.000		80	40-140	5	20	
Chrysene	3.15	0.05	ug/L	4.000		79	40-140	2	20	
Dibenzo(a,h)Anthracene	3.29	0.05	ug/L	4.000		82	40-140	2	20	
Diethylphthalate	3.37	2.50	ug/L	4.000		84	40-140	3	20	
Dimethylphthalate	3.36	2.50	ug/L	4.000		84	40-140	3	20	
Di-n-butylphthalate	2.87	2.50	ug/L	4.000		72	40-140	3	20	
Di-n-octylphthalate	2.91	2.50	ug/L	4.000		73	40-140	3	20	
Fluoranthene	3.02	0.20	ug/L	4.000		76	40-140	2	20	
Fluorene	3.16	0.20	ug/L	4.000		79	40-140	3	20	
Indeno(1,2,3-cd)Pyrene	3.27	0.05	ug/L	4.000		82	40-140	3	20	
Naphthalene	1.90	0.20	ug/L	4.000		47	40-140	4	20	
Pentachlorophenol	3.64	0.90	ug/L	4.000		91	30-130	7	20	
Phenanthrene	2.88	0.20	ug/L	4.000		72	40-140	3	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C(SIM) Polynuclear Aromatic Hydrocarbons

Batch CA50616 - 3510C

Pyrene	3.07	0.20	ug/L	4.000		77	40-140	6	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.36		ug/L	2.500		54	30-130			
Surrogate: 2,4,6-Tribromophenol	4.65		ug/L	3.750		124	15-110			S+
Surrogate: 2-Fluorobiphenyl	2.15		ug/L	2.500		86	30-130			
Surrogate: Nitrobenzene-d5	1.77		ug/L	2.500		71	30-130			
Surrogate: p-Terphenyl-d14	2.30		ug/L	2.500		92	30-130			

Classical Chemistry

Batch CA50510 - General Preparation

Blank										
Hexavalent Chromium	ND	10	ug/L							
LCS										
Hexavalent Chromium	0.5		mg/L	0.4998		99	90-110			
LCS Dup										
Hexavalent Chromium	0.5		mg/L	0.4998		99	90-110	0.2	20	

Batch CA50537 - General Preparation

Blank										
Dissolved Ferrous Iron	ND	50	ug/L							
Ferrous Iron	ND	50	ug/L							
LCS										
Dissolved Ferrous Iron	0.1		mg/L	0.1000		95	80-120			
Ferrous Iron	0.1		mg/L	0.1000		95	80-120			

Batch CA50538 - General Preparation

Blank										
Total Residual Chlorine	ND	10	ug/L							
LCS										
Total Residual Chlorine	1		mg/L	0.9960		100	85-115			

Batch CA50601 - General Preparation

Blank										
Nitrite as N	ND	0.010	mg/L							
LCS										
Nitrite as N	0.261		mg/L	0.2497		104	90-110			

Batch CA50602 - General Preparation

Blank										
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS										
Nitrate/Nitrite as N	0.520		mg/L	0.5000		104	90-110			

Batch CA50605 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch CA50605 - General Preparation										
Total Suspended Solids	64		mg/L	68.80		93	80-120			
Batch CA50606 - General Preparation										
Blank										
Total Dissolved Solids	ND	10	mg/L							
LCS										
Total Dissolved Solids	230		mg/L	221.0		104	80-120			
Batch CA50626 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	14	5	mg/L	19.38		74	66-114			
Batch CA50630 - General Preparation										
Blank										
Alkalinity as CaCO3	ND	2	mg/L							
LCS										
Alkalinity as CaCO3	57		mg/L	55.20		103	85-115			
Batch CA50725 - General Preparation										
Blank										
Chemical Oxygen Demand	ND	100	mg/L							
LCS										
Chemical Oxygen Demand	408	100	mg/L	401.2		102	95-105			
Batch CA50726 - General Preparation										
Blank										
Chemical Oxygen Demand	ND	10	mg/L							
LCS										
Chemical Oxygen Demand	49.4	10	mg/L	50.15		99	95-105			
Batch CA50729 - General Preparation										
Blank										
Phenols	ND	100	ug/L							
LCS										
Phenols	98	100	ug/L	100.0		98	80-120			
LCS										
Phenols	1030	100	ug/L	1000		103	80-120			
Batch CA50730 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	2.4		mg/L	2.500		96	90-110			
Batch CA50830 - General Preparation										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch CA50830 - General Preparation										
Blank										
Sulfide	ND	0.05	mg/L							
LCS										
Sulfide	0.51	0.05	mg/L	0.5000		102	80-120			
Batch CA50920 - TCN Prep										
Blank										
Total Cyanide (LL)	ND	5.0	ug/L							
LCS										
Total Cyanide (LL)	20.0	5.0	ug/L	20.06		100	90-110			
LCS										
Total Cyanide (LL)	149	5.0	ug/L	150.4		99	90-110			
LCS Dup										
Total Cyanide (LL)	150	5.0	ug/L	150.4		100	90-110	0.5	20	
Batch CA50923 - General Preparation										
Blank										
Sulfate	ND	5.0	mg/L							
LCS										
Sulfate	9.5		mg/L	9.988		95	85-115			
Batch CA50926 - TCN Prep										
Blank										
Free Cyanide	ND	5	ug/L							
LCS										
Free Cyanide	0.0200		mg/L	0.02006		100	90-110			
LCS										
Free Cyanide	0.151		mg/L	0.1504		100	90-110			
LCS Dup										
Free Cyanide	0.151		mg/L	0.1504		101	90-110	0.5	20	
Batch CA51006 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	2.6		mg/L	2.500		103	90-110			
8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch CA50632 - 504/8011										
Blank										
1,2-Dibromoethane	ND	0.015	ug/L							
<i>Surrogate: Pentachloroethane</i>	<i>0.148</i>		ug/L	<i>0.2000</i>		<i>74</i>	<i>30-150</i>			
LCS										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch CA50632 - 504/8011										
1,2-Dibromoethane	0.248	0.015	ug/L	0.2000		124	60-140			
<i>Surrogate: Pentachloroethane</i>	<i>0.171</i>		ug/L	<i>0.2000</i>		<i>85</i>	<i>30-150</i>			
LCS										
1,2-Dibromoethane	0.104	0.015	ug/L	0.08000		130	60-140			
<i>Surrogate: Pentachloroethane</i>	<i>0.0688</i>		ug/L	<i>0.08000</i>		<i>86</i>	<i>30-150</i>			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

Notes and Definitions

- U Analyte included in the analysis, but not detected
- S+ Surrogate recovery(ies) above upper control limit (S+).
- HT The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
- H Estimated value. Sample hold times were exceeded (H).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- C+ Continuing Calibration recovery is above upper control limit (C+).
- B+ Blank Spike recovery is above upper control limit (B+).
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1501022

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01
<http://www.a2la.org/scopepdf/2864-01.pdf>

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: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

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.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 15010022
Date Project Due: 1/12/15
Days For Project: 5 Day

Items to be checked upon receipt:

- 1. Air Bill Manifest Present? * No
- Air No.: _____
- 2. Were Custody Seals Present? No
- 3. Were Custody Seals Intact? N/A
- 4. Is Radiation count < 100 CPM? Yes
- 5. Is a cooler present? Yes
- Cooler Temp: 4.1
- Iced With: Ice
- 6. Was COC included with samples? Yes
- 7. Was COC signed and dated by client? Yes
- 8. Does the COC match the sample Yes
- 9. Is COC complete and correct? Yes

- 10. Are the samples properly preserved? Yes *NO w/ 1/5/15*
- 11. Proper sample containers used? Yes
- 12. Any air bubbles in the VOA vials? No *w/ 1/5/15*
- 13. Holding times exceeded? Yes *w/ 1/5/15*
- 14. Sufficient sample volumes? Yes
- 15. Any Subcontracting needed? No
- 16. Are ESS labels on correct containers? Yes No
- 17. Were samples received intact? Yes No
- ESS Sample IDs: _____
- Sub Lab: _____
- Analysis: _____
- TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

Cr⁷⁶ poured off into 250 ml containers - remainder preserved w/ HNO₃ w/ 1/5/15 @ 1522

PERMIT PER CMT proceed w/ exceeded HT analyses w/ 1/5/15

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	1 L Glass	2	H2SO4
1	Yes	1 L Glass	8	NP
1	Yes	1 L Plastic	2	NP
1	Yes	250 ml Plastic	1	H2SO4
1	Yes	250 ml Plastic	2	HNO3
1	Yes	250 ml Plastic	2	NP
1	Yes	250 ml Plastic	1	Zn Ace*, NaOH
1	Yes	40 ml - VOA	6	HCL
1	Yes	500 ml Plastic	1	HNO3
1	Yes	500 ml Plastic	1	NaOH pH 7.12 w/ 1/5/15 1515
2	Yes	1 L Glass	2	H2SO4
2	Yes	1 L Glass	8	NP
2	Yes	1 L Plastic	2	NP
2	Yes	250 ml Plastic	1	H2SO4
2	Yes	250 ml Plastic	2	HNO3
2	Yes	250 ml Plastic	2	NP
2	Yes	250 ml Plastic	1	Zn Ace*, NaOH
2	Yes	40 ml - VOA	6	HCL
2	Yes	500 ml Plastic	1	HNO3
2	Yes	500 ml Plastic	1	NaOH pH=11 w/ 1/5/15 1515
3	Yes	1 L Glass	2	H2SO4
3	Yes	1 L Glass	8	NP
3	Yes	1 L Plastic	2	NP
3	Yes	250 ml Plastic	1	H2SO4
3	Yes	250 ml Plastic	2	HNO3

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.

ESS Project ID: 15010022

3 Yes
3 Yes
3 Yes
3 Yes
4 Yes
4 Yes
4 Yes

250 ml Plastic 2
250 ml Plastic 1
40 ml - VOA 6
500 ml Plastic 1
500 ml Plastic 1
250 ml Plastic 2
250 ml Plastic 1
500 ml Plastic 1

NP
Zn Ace*, NaOH
HCL
HNO3
NaOH
HNO3
NP
HNO3

pH = 11 w/ 1/5/15 1515

Completed By: [Signature]

Date/Time: 1/5/15 1527

Reviewed By: [Signature]

Date/Time: 1/5/15 1537

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time Standard Rush Approved By: _____
 State where samples were collected (MA RI CT NH NJ NY ME Other) MA RI CT NH NJ NY ME Other
 Is this project for any of the following: (please circle)
 MA-MCP CT-RCP NJ-DKQP RGP DOD Other _____
 Reporting Limits: _____
 Electronic Deliverable Yes No
 Format: Excel Access PDF Other _____

ESS LAB PROJECT ID
1501022

ESS Lab Sample ID	Date	Collection Time	Grab-G Composite-C	Matrix	Sample Name	Upper-Depth (feet)	Lower-Depth (feet)	Analysis # of Containers	See attached for analyses	Total & dissolved metals only	Comment #
1	1/2/2015	10:18	G	GW	GZ-003	2, 3, 4, 5, 8	P, A, G, V	25	X		1.
2	1/2/2015	13:40	G	GW	GZ-005	↑	↑	25	X		1.
3	1/2/2015	13:57	G	GW	GZ-006	↑	↑	25	X		1.
4	1/2/2015	16:58	G	GW	GZ-010	4.	Row	3	X		1.

Project No.: 01-0171521-A6.12
 Project Name: Wynn Everett
 Contract Pricing: _____
 Special Pricing: Project Pricing
 Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____
 Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA
 Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter
 Cooler Present Yes No
 Seals Intact Yes No
 Cooler Temperature: 1.9°/2.2°/4.1°/3.3°
 Relinquished by (Signature): [Signature] Date/Time: 1/15/15
 Relinquished by (Signature): [Signature] Date/Time: 1/15/15
 Relinquished by (Signature): [Signature] Date/Time: 1/15/15
 Relinquished by (Signature): [Signature] Date/Time: 1/15/15
 Comments: *See attached sheet for list of RGP analyses to run. 1. Dissolved metals samples filtered in the field. (Dissolved Metals and Fe2+Fe3)
 Sampled by: James Brown and Matt Dion
 Received by (Signature): [Signature] Date/Time: 1/15/15
 Received by (Signature): [Signature] Date/Time: 1/15/15
 Received by (Signature): [Signature] Date/Time: 1/15/15
 Received by (Signature): [Signature] Date/Time: 1/15/15

Please E-mail all changes to Chain of Custody in writing.

1501022
1/15/15

James Brown

From: Kathleen Kerigan
Sent: Tuesday, December 23, 2014 2:17 PM
To: David E. Leone
Cc: Michelle Miranda; Christine Taylor; Elizabeth Ouk; Matthew Dion; James Brown
Subject: RE: Everett items - RGP sampling next week

Follow Up Flag: Follow up
Flag Status: Flagged

Hi ESS,

So that will mean instead of 2, it will be 3 samples for these analytes:

- Hardness
- Alkalinity
- Sulfates/sulfides
- Nitrates/nitrites
- Total/Free cyanide
- Chemical oxygen demand
- Total dissolved solids and total suspended solids <- TSS is also covered below
- Total and dissolved metals (iron, arsenic, zinc, lead, and nickel) <- Total metals is covered below **Field Filtered**
- Total and dissolved Speciated metals (Fe2+, Fe3+) **Field Filtered**
- Total Suspended Solids (TSS) by Method 2540D;
- Total Residual Chlorine (TRC) by EPA Method 4500-Cl D;
- TPH by EPA Method 1664A;
- Cyanide by EPA Method 335.4;
- VOCs by EPA Method 8260;
- Ethylene Dibromide (EDB) by EPA Method 504.1;
- Total Phenols by EPA Method 420.1;
- SVOCs by EPA Method 8270;
- PAHs, Total Phthalate, Pentachlorophenol (PCP) and Bis (2-Ethylhexyl) Phthalate (BEHP) by EPA Method 8270-SIM;
- PCBs by EPA Method 8082;
- Chloride by EPA Method 300; and
- Metals (Antimony, Arsenic, Cadmium, Chromium III and VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Zinc and iron) by EPA Method 6020, 7470 or 7196A.

* 1,4 Dioxane per client e-mail confirmation 1/15/15

Kathleen Kerigan
Assistant Project Manager
GZA GeoEnvironmental, Inc.
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o: 781.278.5830 | c: 202.689.5142
Kathleen.Kerigan@gza.com | www.gza.com

Follow us on:   

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time Standard Rush Approved By: _____

State where samples were collected (MA RI CT NH NJ NY ME Other) MA RI CT NH NJ NY ME Other

Is this project for any of the following: (please circle)
 MA-MCP CT-RCP NJ-DKQP RGP DOD Other _____

ESS LAB PROJECT ID 1501022

Reporting Limits _____

Electronic Deliverable Yes No
 Format: Excel Access PDF Other _____

ESS Lab Sample ID	Date	Collection Time	Grab-G Composite-C	Matrix	Sample Name	Upper-Depth (feet)	Lower-Depth (feet)	# of Containers	Analysis	See attached for analyses	Total & dissolved metals only	Comment #
1	1/2/2015	10:18	G	GW	GZ-003	2, 3, 4, 5, 8	9, 10, 11	25		X		1.
2	1/2/2015	13:40	G	GW	GZ-005	↑	↑	25		X		1.
3	1/2/2015	13:57	G	GW	GZ-006	↑	↑	25		X		1.
4	1/2/2015	16:58	G	GW	GZ-010	4.	Bottom	3		X		1.

Project No.: 01-0171521-A6.1.2

Project Name: Wynn Everett

Contract Pricing _____

Special Pricing, Project Pricing _____

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9- _____

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present Yes No

Seals Intact Yes No

Cooler Temperature: 1.9°/2.2°/4.1°/3.3°

Requisitioned by: (Signature) [Signature] Date/Time 1/15/15

Received by: (Signature) [Signature] Date/Time 1/15/15

Requisitioned by: (Signature) [Signature] Date/Time 1/15/15

Received by: (Signature) [Signature] Date/Time 1/15/15

Comments: *See attached sheet for list of RGP analyses to run. 1. Dissolved metals samples filtered in the field. (Dissolved Metals and Fe)

Sampled by: James Brown and Matt Dion

Please E-mail all changes to Chain of Custody in writing.

~~HS~~ 1/5/15
1501022

James Brown

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Sent: Tuesday, December 23, 2014 2:17 PM
To: David E. Leone
Cc: Michelle Miranda; Christine Taylor; Elizabeth Ouk; Matthew Dion; James Brown
Subject: RE: Everett items - RGP sampling next week

Follow Up Flag: Follow up
Flag Status: Flagged

Hi ESS,

So that will mean instead of 2, it will be 3 samples for these analytes:

- Hardness
- Alkalinity
- Sulfates/sulfides
- Nitrates/nitrites
- Total/Free cyanide
- Chemical oxygen demand
- Total dissolved solids and total suspended solids <- TSS is also covered below
- Total and dissolved metals (iron, arsenic, zinc, lead, and nickel) <- Total metals is covered below **Field Filtered**
- Total and dissolved Speciated metals (Fe2+, Fe3+) **Field Filtered**
- Total Suspended Solids (TSS) by Method 2540D;
- Total Residual Chlorine (TRC) by EPA Method 4500-Cl D;
- TPH by EPA Method 1664A;
- Cyanide by EPA Method 335.4;
- VOCs by EPA Method 8260;
- Ethylene Dibromide (EDB) by EPA Method 504.1;
- Total Phenols by EPA Method 420.1;
- SVOCs by EPA Method 8270;
- PAHs, Total Phthalate, Pentachlorophenol (PCP) and Bis (2-Ethylhexyl) Phthalate (BEHP) by EPA Method 8270-SIM;
- PCBs by EPA Method 8082;
- Chloride by EPA Method 300; and
- Metals (Antimony, Arsenic, Cadmium, Chromium III and VI, Copper, Lead, Mercury, Nickel, Selenium, Silver, Zinc and iron) by EPA Method 6020, 7470 or 7196A.

Kathleen Kerigan
Assistant Project Manager
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Kathleen.Kerigan@gza.com | www.gza.com

Follow us on:   



CERTIFICATE OF ANALYSIS

David E Leone
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.20 T13)
ESS Laboratory Work Order Number: 1504726

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 3:09 pm, May 07, 2015

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 NELAC Standards, A2LA 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: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

SAMPLE RECEIPT

The following samples were received on April 30, 2015 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES).

Lab Number	Sample Name	Matrix	Analysis
1504726-01	GZ-019	Ground Water	5220D, 6010C, 7010
1504726-02	GZ-024	Ground Water	5220D, 6010C, 7010



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

PROJECT NARRATIVE

Dissolved Metals

CD53003-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Arsenic (75% @ 80-120%)

Total Metals

CD53003-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Arsenic (75% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

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
- 8015D - 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 / VPH

Prep Methods

- 3005A - Aqueous ICP and Graphite Furnace Digestion
- 3020A - Aqueous 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
- 5035 - Solid Purge and Trap



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-019
Date Sampled: 04/29/15 09:55
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	ND (3.0)		7010		3	JP	05/02/15 9:07	50	10	CD53003
Iron	15000 (200)		6010C		10	KJK	05/01/15 18:12	50	10	CD53003
Zinc	ND (50.0)		6010C		5	KJK	05/06/15 16:27	50	10	CD53003



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-019
Date Sampled: 04/29/15 09:55
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Arsenic	ND (3.0)		7010		3	JP	05/02/15 9:19	50	10	CD53003
Iron	15400 (200)		6010C		10	KJK	05/01/15 18:18	50	10	CD53003
Zinc	ND (50.0)		6010C		5	KJK	05/06/15 16:37	50	10	CD53003



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-019
Date Sampled: 04/29/15 09:55
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-01
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chemical Oxygen Demand	1320 (400)		5220D		4	EEM	05/04/15 12:45	mg/L	CE50418



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-024
Date Sampled: 04/29/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved 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>
Arsenic	ND (1.0)		7010		1	JP	05/02/15 9:53	50	10	CD53003
Iron	491 (60.0)		6010C		3	KJK	05/01/15 17:51	50	10	CD53003
Zinc	ND (30.0)		6010C		3	KJK	05/01/15 17:51	50	10	CD53003



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-024
Date Sampled: 04/29/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Arsenic	ND (3.0)		7010		3	JP	05/02/15 9:25	50	10	CD53003
Iron	2600 (60.0)		6010C		3	KJK	05/01/15 18:03	50	10	CD53003
Zinc	57.7 (30.0)		6010C		3	KJK	05/01/15 18:03	50	10	CD53003



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: GZ-024
Date Sampled: 04/29/15 13:40
Percent Solids: N/A

ESS Laboratory Work Order: 1504726
ESS Laboratory Sample ID: 1504726-02
Sample Matrix: Ground Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chemical Oxygen Demand	433 (100)		5220D		1	EEM	05/04/15 12:45	mg/L	CE50418



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Dissolved Metals

Batch CD53003 - 3005A/200.7

Blank

Arsenic	ND	2.5	ug/L							
---------	----	-----	------	--	--	--	--	--	--	--

Blank

Arsenic	ND	1.0	ug/L							
Iron	ND	20.0	ug/L							
Zinc	ND	10.0	ug/L							

LCS

Arsenic	208	50.0	ug/L	250.0		83	80-120			
Iron	1070	50.0	ug/L	1250		85	80-120			
Zinc	221	25.0	ug/L	250.0		88	80-120			

LCS Dup

Arsenic	187	50.0	ug/L	250.0		75	80-120	10	20	B-
Iron	1120	50.0	ug/L	1250		90	80-120	5	20	
Zinc	223	25.0	ug/L	250.0		89	80-120	0.9	20	

Total Metals

Batch CD53003 - 3005A/200.7

Blank

Arsenic	ND	1.0	ug/L							
Iron	ND	20.0	ug/L							
Zinc	ND	10.0	ug/L							

LCS

Arsenic	208	50.0	ug/L	250.0		83	80-120			
Iron	1070	50.0	ug/L	1250		85	80-120			
Zinc	221	25.0	ug/L	250.0		88	80-120			

LCS Dup

Arsenic	187	50.0	ug/L	250.0		75	80-120	10	20	B-
Iron	1120	50.0	ug/L	1250		90	80-120	5	20	
Zinc	223	25.0	ug/L	250.0		89	80-120	0.9	20	

Classical Chemistry

Batch CE50418 - General Preparation

Blank

Chemical Oxygen Demand	ND	100	mg/L							
------------------------	----	-----	------	--	--	--	--	--	--	--

LCS

Chemical Oxygen Demand	397	100	mg/L	401.2		99	95-105			
------------------------	-----	-----	------	-------	--	----	--------	--	--	--



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

Notes and Definitions

- U Analyte included in the analysis, but not detected
- D Diluted.
- B- Blank Spike recovery is below lower control limit (B-).
- 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
- [2C] Result was taken from the second column. Dual column analysis.



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1504726

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)

A2LA Accredited: Testing Cert# 2864.01

<http://www.a2la.org/scopepdf/2864-01.pdf>

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: RI0002

<http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls>

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.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.epsc.gov/cgi-bin/labapplist.aspx>

Sample and Cooler Receipt Checklist

Client: GZA GeoEnvironmental, Inc.
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 15040726
Date Project Due: 5/7/15
Days For Project: 5 Day

Items to be checked upon receipt:

- | | | | |
|--|-------------------------------|---|---|
| 1. Air Bill Manifest Present? | <input type="checkbox"/> * No | 10. Are the samples properly preserved? | <input type="checkbox"/> Yes |
| Air No.: | | 11. Proper sample containers used? | <input type="checkbox"/> Yes |
| 2. Were Custody Seals Present? | <input type="checkbox"/> Yes | 12. Any air bubbles in the VOA vials? | <input type="checkbox"/> N/A |
| 3. Were Custody Seals Intact? | <input type="checkbox"/> Yes | 13. Holding times exceeded? | <input type="checkbox"/> No |
| 4. Is Radiation count < 100 CPM? | <input type="checkbox"/> Yes | 14. Sufficient sample volumes? | <input type="checkbox"/> Yes |
| 5. Is a cooler present? | <input type="checkbox"/> Yes | 15. Any Subcontracting needed? | <input type="checkbox"/> No |
| Cooler Temp: <u>5.3</u> | | 16. Are ESS labels on correct containers? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Iced With: <u>Ice</u> | | 17. Were samples received intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Was COC included with samples? | <input type="checkbox"/> Yes | ESS Sample IDs: _____ | |
| 7. Was COC signed and dated by client? | <input type="checkbox"/> Yes | Sub Lab: _____ | |
| 8. Does the COC match the sample | <input type="checkbox"/> Yes | Analysis: _____ | |
| 9. Is COC complete and correct? | <input type="checkbox"/> Yes | TAT: _____ | |

18. Was there need to call project manager to discuss status? If yes, please explain.

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	250 ml Plastic	1	H2SO4
1	Yes	250 ml Plastic	2	HNO3
2	Yes	250 ml Plastic	1	H2SO4
2	Yes	250 ml Plastic	2	HNO3

Completed By: [Signature] Date/Time: 4/30/15 1735
Reviewed By: Nancy a Rose Date/Time: 4/30/15 1740

CUSTODY SEAL



ENVIRONMENTAL SAMPLING SUPPLY
www.essvial.com 800-233-8425

Date: 4/30/15
Signature: [Signature]

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time Standard Other _____
 If faster than 5 days, prior approval by laboratory is required # _____
 State where samples were collected from:
 MA RI CT NH NJ NY ME Other _____
 Is this project for any of the following: USACE Other _____
 MA-MCP Navy

Reporting Limits
 Electronic Deliverable Yes No _____
 Format: Excel Access _____ PDF Other _____

Co. Name	Project #	Project Name (20 Char. or less)	Type of Containers	Number of Containers	Type of Containers					
GZA Geo Environmental	01-0171521-20 T13	Wynn Everett								
Contact Person	Address	PO#								
Roger Howard	B3 Federal St	3rd Floor								
City	State	Zip								
Boston	MA	02110								
Telephone #	Fax #	Email Address								
857-280-9129	-9129	roger.howard@gza.com								
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Type of Containers	Number of Containers	Type of Containers
1	4/29/15	0955		X GW		GZ-019	34	P	3	P
2	4/29/15	1340		X GW		GZ-024	34	P	3	P

Container Type	P-Poly	G-Glass	S-Sterile	V-VOA	Matrix	S-Soil	SD-Solid	D-Sludge	WW-Waste Water	GW-Ground Water	SW-Surface Water	DW-Drinking Water	O-Oil	W-Wipes	F-Filters	
Cooler Present	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	Internal Use Only											
Seals Intact	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	NA: _____	<input type="checkbox"/>	Pickup									
Cooler Temp:	5.3°C		4/30/15													
Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15	0845	Received by: (Signature)	[Signature]		Date/Time	4/30/15	1615	Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15
Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15	1315	Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15	1615	Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15
Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15	1730	Received by: (Signature)	[Signature]		Date/Time	4/30/15	1730	Relinquished by: (Signature)	[Signature]		Date/Time	4/30/15

Preservation Code 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9-
 Sampled by: ABB *client updated project name and # by e-mail cmt 5/1/15
 Comments: 1) Total and Dissolved Metals (As, Fe, Zn)

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CHAIN OF CUSTODY

Page 1 of 1

Turn Time Standard Other _____
 If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from:
 MA RI CT NH NJ NY ME Other _____

Is this project for any of the following: USACE Other _____
 MA-MCP Navy

Reporting Limits
 Electronic Deliverable Yes No _____
 Format: Excel Access _____ PDF Other _____

Co. Name	Project #	Project Name (20 Char. or less)	Type of Containers	Number of Containers	Type of Containers					
GZA Geo Environmental										
Contact Person Roger Howard	Address 83 Federal St	3rd Floor								
City Boston	State MA	Zip 02110								
Telephone # 857-280-9129	Fax # -9129	Email Address roger.howard@gza.com								
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Type of Containers	Number of Containers	Type of Containers
1	4/29/15	0955		X GW		P102-01P	34	P	3	P
2	4/29/15	1340		X GW		GZ-02Y	34	P	3	P

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present Yes No Internal Use Only Pickup Technicians

Seals Intact Yes No NA:

Cooler Temp: 5.3°C 4/30/15

Relinquished by: (Signature) [Signature] Date/Time 4/30/15 0845

Relinquished by: (Signature) [Signature] Date/Time 4/30/15 1615

Received by: (Signature) [Signature] Date/Time 4/30/15 1730

Comments: 1) Total and Dissolved Metals (As, Fe, Zn)

Relinquished by: (Signature) [Signature] Date/Time _____

Received by: (Signature) [Signature] Date/Time _____

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt 10/26/04 A



CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1701008

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 5:01 pm, Jan 06, 2017

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 tandards, 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: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

SAMPLE RECEIPT

The following samples were received on January 03, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

Lab Number	Sample Name	Matrix	Analysis
1701008-01	Influent_01.03.17	Waste Water	§, 2540D, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM
1701008-02	Effluent_01.03.17	Waste Water	§, 2540D, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

PROJECT NARRATIVE

Total Metals

1701008-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Cadmium , Nickel

1701008-02 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Arsenic , Cadmium

CA70304-BS2 [Blank Spike recovery is above upper control limit \(B+\).](#)
Lead (122% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

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 / 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
- 5035 - 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: Wynn Everett - RGP
Client Sample ID: Influent_01.03.17
Date Sampled: 01/03/17 08:25
Percent Solids: N/A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-01
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Arsenic	246 (30.0)		6010C		3	KJK	01/05/17 13:04	50	10	CA70304
Cadmium	EL ND (0.5)		7010		5	KJK	01/04/17 23:50	50	10	CA70304
Chromium III	ND (12)		6010C		3	JLK	01/05/17 13:04	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	01/04/17 21:44	50	10	CA70304
Hardness	3350 (2.6)		6010B		10	KJK	01/05/17 12:59	1	1	[CALC]
Iron	195000 (60.0)		6010C		3	KJK	01/05/17 13:04	50	10	CA70304
Lead	ND (2.0)		7010		5	KJK	01/05/17 7:30	50	10	CA70304
Nickel	EL ND (12.0)		6010C		3	KJK	01/05/17 13:04	50	10	CA70304
Zinc	164 (30.0)		6010C		3	KJK	01/05/17 13:04	50	10	CA70304



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.03.17
Date Sampled: 01/03/17 08:25
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-01
Sample Matrix: Waste Water
Units: ug/L
Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	01/04/17 13:09	C7A0032	CA70429
Trichloroethene	ND (1.0)		8260B		1	01/04/17 13:09	C7A0032	CA70429

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	94 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	84 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	94 %		70-130
<i>Surrogate: Toluene-d8</i>	96 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.03.17
Date Sampled: 01/03/17 08:25
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-01
Sample Matrix: Waste Water
Units: ug/L
Analyst: VSC
Prepared: 1/3/17 16:30

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.432 (0.250)		8270D SIM		1	01/04/17 9:32	C7A0022	CA70335
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		53 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_01.03.17
 Date Sampled: 01/03/17 08:25
 Percent Solids: N/A
 Initial Volume: 1070
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1701008
 ESS Laboratory Sample ID: 1701008-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 1/3/17 15:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	01/04/17 3:24	C7A0019	CA70319

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	52 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	72 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	65 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	84 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.03.17
Date Sampled: 01/03/17 08:25
Percent Solids: N/A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4700 (200)		§		1	SUB	01/05/17 14:56	mg/L	CA70427
Total Cyanide (LL)	58.3 (5.00)		4500 CN CE		1	EEM	01/04/17 11:00	ug/L	CA70424
Total Suspended Solids	8 (5)		2540D		1	EEM	01/03/17 16:35	mg/L	CA70314



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.03.17
Date Sampled: 01/03/17 08:00
Percent Solids: N/A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-02
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Arsenic	EL ND (30.0)		6010C		3	KJK	01/05/17 13:14	50	10	CA70304
Cadmium	EL ND (0.5)		7010		5	KJK	01/04/17 23:25	50	10	CA70304
Chromium III	ND (10)		6010C		1	JLK	01/04/17 21:49	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	01/04/17 21:49	50	10	CA70304
Hardness	1560 (2.6)		6010B		10	KJK	01/05/17 13:10	1	1	[CALC]
Iron	69.3 (60.0)		6010C		3	KJK	01/05/17 13:14	50	10	CA70304
Lead	ND (2.0)		7010		5	KJK	01/05/17 7:36	50	10	CA70304
Nickel	ND (4.0)		6010C		1	KJK	01/04/17 21:49	50	10	CA70304
Zinc	ND (30.0)		6010C		3	KJK	01/05/17 13:14	50	10	CA70304



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_01.03.17
 Date Sampled: 01/03/17 08:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1701008
 ESS Laboratory Sample ID: 1701008-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	01/04/17 12:44	C7A0032	CA70429
Trichloroethene	ND (1.0)		8260B		1	01/04/17 12:44	C7A0032	CA70429

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	94 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	80 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	97 %		70-130
<i>Surrogate: Toluene-d8</i>	98 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.03.17
Date Sampled: 01/03/17 08:00
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-02
Sample Matrix: Waste Water
Units: ug/L
Analyst: VSC
Prepared: 1/3/17 16:30

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	ND (0.250)		8270D SIM		1	01/04/17 10:07	C7A0022	CA70335
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		41 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_01.03.17
 Date Sampled: 01/03/17 08:00
 Percent Solids: N/A
 Initial Volume: 1070
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1701008
 ESS Laboratory Sample ID: 1701008-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 1/3/17 15:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	01/04/17 4:13	C7A0019	CA70319

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	60 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	78 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	74 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	83 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.03.17
Date Sampled: 01/03/17 08:00
Percent Solids: N/A

ESS Laboratory Work Order: 1701008
ESS Laboratory Sample ID: 1701008-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	3900 (200)		§		1	SUB	01/05/17 14:56	mg/L	CA70427
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	01/04/17 11:00	ug/L	CA70424
Total Suspended Solids	5 (5)		2540D		1	EEM	01/03/17 16:35	mg/L	CA70314



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Total Metals

Batch CA70304 - 3005A

Blank

Cadmium	ND	0.1	ug/L
Calcium	ND	40.0	ug/L
Chromium III	ND	4	ug/L
Copper	ND	4.0	ug/L
Hardness	ND	0.3	mg/L
Iron	ND	20.0	ug/L
Lead	ND	0.4	ug/L
Magnesium	ND	40.0	ug/L
Nickel	ND	4.0	ug/L
Zinc	ND	10.0	ug/L

LCS

Cadmium	50.5	50.0	ug/L	50.00	101	80-120	
Calcium	923	40.0	ug/L	1000	92	80-120	
Chromium III	89.0	4	ug/L				
Copper	86.7	4.0	ug/L	100.0	87	80-120	
Hardness	6.00	0.3	mg/L				
Iron	433	20.0	ug/L	500.0	87	80-120	
Lead	122	10.0	ug/L	100.0	122	80-120	B+
Magnesium	898	40.0	ug/L	1000	90	80-120	
Nickel	89.7	4.0	ug/L	100.0	90	80-120	
Zinc	92.3	10.0	ug/L	100.0	92	80-120	

Batch CA70328 - [CALC]

Blank

Chromium III	ND	10	ug/L
--------------	----	----	------

LCS

Chromium III	ND		ug/L
--------------	----	--	------

LCS Dup

Chromium III	ND		ug/L
--------------	----	--	------

8260B Volatile Organic Compounds

Batch CA70429 - 5030B

Blank

1,2-Dichloroethane	ND	1.0	ug/L			
Trichloroethene	ND	1.0	ug/L			
Surrogate: 1,2-Dichloroethane-d4	23.7		ug/L	25.00	95	70-130
Surrogate: 4-Bromofluorobenzene	20.0		ug/L	25.00	80	70-130
Surrogate: Dibromofluoromethane	24.2		ug/L	25.00	97	70-130
Surrogate: Toluene-d8	24.3		ug/L	25.00	97	70-130

LCS

1,2-Dichloroethane	9.4		ug/L	10.00	94	70-130
Trichloroethene	10.0		ug/L	10.00	100	70-130
Surrogate: 1,2-Dichloroethane-d4	24.7		ug/L	25.00	99	70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CA70429 - 5030B

Surrogate: 4-Bromofluorobenzene	20.2		ug/L	25.00		81	70-130			
Surrogate: Dibromofluoromethane	25.3		ug/L	25.00		101	70-130			
Surrogate: Toluene-d8	23.9		ug/L	25.00		95	70-130			

LCS Dup

1,2-Dichloroethane	9.8		ug/L	10.00		98	70-130	4	25	
Trichloroethene	10.1		ug/L	10.00		101	70-130	0.8	25	
Surrogate: 1,2-Dichloroethane-d4	24.3		ug/L	25.00		97	70-130			
Surrogate: 4-Bromofluorobenzene	19.8		ug/L	25.00		79	70-130			
Surrogate: Dibromofluoromethane	25.2		ug/L	25.00		101	70-130			
Surrogate: Toluene-d8	23.3		ug/L	25.00		93	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CA70335 - 3535A

Blank

1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	2.69		ug/L	5.000		54	15-115			

LCS

1,4-Dioxane	9.69	0.250	ug/L	10.00		97	40-140			
Surrogate: 1,4-Dioxane-d8	2.75		ug/L	5.000		55	15-115			

LCS Dup

1,4-Dioxane	9.23	0.250	ug/L	10.00		92	40-140	5	20	
Surrogate: 1,4-Dioxane-d8	2.55		ug/L	5.000		51	15-115			

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CA70319 - 3510C

Blank

Fluorene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.954		ug/L	2.500		38	30-130			
Surrogate: 2-Fluorobiphenyl	1.58		ug/L	2.500		63	30-130			
Surrogate: Nitrobenzene-d5	1.72		ug/L	2.500		69	30-130			
Surrogate: p-Terphenyl-d14	1.92		ug/L	2.500		77	30-130			

LCS

Fluorene	2.81	0.20	ug/L	4.000		70	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	0.915		ug/L	2.500		37	30-130			
Surrogate: 2-Fluorobiphenyl	1.59		ug/L	2.500		63	30-130			
Surrogate: Nitrobenzene-d5	1.66		ug/L	2.500		66	30-130			
Surrogate: p-Terphenyl-d14	2.21		ug/L	2.500		88	30-130			

LCS Dup

Fluorene	2.92	0.20	ug/L	4.000		73	40-140	4	20	
Surrogate: 1,2-Dichlorobenzene-d4	0.910		ug/L	2.500		36	30-130			
Surrogate: 2-Fluorobiphenyl	1.55		ug/L	2.500		62	30-130			
Surrogate: Nitrobenzene-d5	1.68		ug/L	2.500		67	30-130			
Surrogate: p-Terphenyl-d14	2.22		ug/L	2.500		89	30-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Classical Chemistry

Batch CA70314 - General Preparation

Blank

Total Suspended Solids	ND	5	mg/L							
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LCS

Total Suspended Solids	66		mg/L	68.70		96	80-120			
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Batch CA70424 - TCN Prep

Blank

Total Cyanide (LL)	ND	5.00	ug/L							
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LCS

Total Cyanide (LL)	20.4	5.00	ug/L	20.06		102	90-110			
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LCS

Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110			
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LCS Dup

Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110	0.2	20	
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CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

Notes and Definitions

- U Analyte included in the analysis, but not detected
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D Diluted.
- B+ Blank Spike recovery is above upper control limit (B+).
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701008

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/water/dwp-services/labcert/documents/AllLabs.xls>

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.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095



LABORATORY REPORT

ESS Laboratory
Attn: Mr. Shawn Morrell
185 Frances Avenue
Cranston, RI 02910-2211

Date Received: 1/3/2017
Date Reported: 1/5/2017
P.O. Number B02406

Work Order #: 1701-00082

Project Name: PROJECT# 1701008

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

All samples were analyzed within the established guidelines of US EPA approved methods with all requirements met, unless otherwise noted at the end of a given sample's analytical results or in a case narrative.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:

Yihai Ding
Technical Director

Laboratory Certification Numbers (as applicable to sample's origin state):

Warwick RI * RI LAI00033, MA M-RI015, CT PH-0508, ME RI00015, NH 2070, NY 11726
Hudson MA * M-MA1117, RI LAO00319

R.I. Analytical Laboratories, Inc.

Laboratory Report

ESS Laboratory

Work Order #: 1701-00082

Project Name: PROJECT# 1701008

Sample Number: 001
Sample Description: 1701008-01
Sample Type : GRAB
Sample Date / Time : 1/03/2017 @ 08:25

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	4700	200	mg/l	EPA 300.0	1/4/2017 17:10	AEG

Sample Number: 002
Sample Description: 1701008-02
Sample Type : GRAB
Sample Date / Time : 1/03/2017 @ 08:00

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	3900	200	mg/l	EPA 300.0	1/4/2017 17:24	AEG



ESS Laboratory
1701-00082
1/5/17

-Method Blanks Results-

Parameter	Units	Results	Date Analyzed
Chloride	mg/l	<1.0	1/4/2017

-LCS/LCS Duplicate Data Results-

Parameter	Spike Conc	LCS Conc	LCS % Rec	LCS Dup Conc	LCS DUP % Rec	% RPD	Date Analyzed
Chloride	10.0	9.74	97				1/4/2017

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/CMT

ESS Project ID: 1701008

Shipped/Delivered Via: ESS Courier

Date Received: 1/3/2017

Project Due Date: 1/5/2017

Days for Project: 2 Day

1. Air bill manifest present? No
Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
Temp: 0.1 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: -1 - -2
Analysis: Chloride 300
TAT: 2 day

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:

Collection date is wrong year el 1/3/17

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)
01	96359	Yes	No	Yes	VOA Vial - HCl	HCl	
01	96360	Yes	No	Yes	VOA Vial - HCl	HCl	
01	96361	Yes	No	Yes	VOA Vial - HCl	HCl	
01	96366	Yes	NA	Yes	1L Amber - Unpres	NP	
01	96367	Yes	NA	Yes	1L Amber - Unpres	NP	
01	96368	Yes	NA	Yes	1L Amber - Unpres	NP	
01	96369	Yes	NA	Yes	1L Amber - Unpres	NP	
01	96371	Yes	NA	Yes	1L Poly - Unpres	NP	
01	96373	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	96375	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH = 10 el 1/3/17 1426
01	96378	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	96379	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	96356	Yes	No	Yes	VOA Vial - HCl	HCl	
02	96357	Yes	No	Yes	VOA Vial - HCl	HCl	
02	96358	Yes	No	Yes	VOA Vial - HCl	HCl	
02	96362	Yes	NA	Yes	1L Amber - Unpres	NP	
02	96363	Yes	NA	Yes	1L Amber - Unpres	NP	
02	96364	Yes	NA	Yes	1L Amber - Unpres	NP	
02	96365	Yes	NA	Yes	1L Amber - Unpres	NP	
02	96370	Yes	NA	Yes	1L Poly - Unpres	NP	
02	96372	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	96374	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH > 12 1/3/17 1426
02	96376	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	96377	Yes	NA	Yes	250 mL Poly - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/CMT

ESS Project ID: 1701008
Date Received: 1/3/2017

2nd Review

Are barcode labels on correct containers?

Yes / No

Completed By:	<u>[Signature]</u>	Date & Time:	<u>1/3/17</u>	<u>1427</u>
Reviewed By:	<u>[Signature]</u>	Date & Time:	<u>1/5/17</u>	<u>1432</u>
Delivered By:	<u>[Signature]</u>	Date & Time:	<u>1/3/17</u>	<u>1437</u>



CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1701591

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 6:05 pm, Feb 01, 2017

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 tandards, 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: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

SAMPLE RECEIPT

The following samples were received on January 30, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1701591-01	Influent_01.30.17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 8260B, 8270D SIM
1701591-02	Effluent_01.30.17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 8260B, 8270D SIM



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

PROJECT NARRATIVE

Total Metals

1701591-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Cadmium , Lead , Nickel

1701591-02 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
Arsenic , Cadmium , Copper , Lead , Nickel

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

- [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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

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 / 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
- 5035 - 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: Wynn Everett - RGP
Client Sample ID: Influent_01.30.17
Date Sampled: 01/30/17 12:10
Percent Solids: N/A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-01
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Arsenic	212 (100)		6010C		10	BJV	01/31/17 14:05	50	10	CA73034
Cadmium	EL ND (5.0)		6010C		5	BJV	01/31/17 13:39	50	10	CA73034
Chromium III	ND (20)		6010C		5	JLK	01/31/17 13:39	1	1	[CALC]
Copper	49.6 (40.0)		6010C		10	BJV	01/31/17 14:05	50	10	CA73034
Hardness	3170 (2.6)		6010B		10	BJV	01/31/17 14:05	1	1	[CALC]
Iron	226000 (200)		6010C		10	BJV	01/31/17 14:05	50	10	CA73034
Lead	EL ND (40.0)		6010C		10	BJV	01/31/17 14:05	50	10	CA73034
Nickel	EL ND (20.0)		6010C		5	BJV	01/31/17 13:39	50	10	CA73034
Zinc	407 (100)		6010C		10	BJV	01/31/17 14:05	50	10	CA73034



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_01.30.17
 Date Sampled: 01/30/17 12:10
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1701591
 ESS Laboratory Sample ID: 1701591-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	01/31/17 16:02	C7A0411	CA73133
Trichloroethene	ND (1.0)		8260B		1	01/31/17 16:02	C7A0411	CA73133

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	111 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	114 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	116 %		70-130
<i>Surrogate: Toluene-d8</i>	107 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.30.17
Date Sampled: 01/30/17 12:10
Percent Solids: N/A
Initial Volume: 100
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-01
Sample Matrix: Waste Water
Units: ug/L
Analyst: VSC
Prepared: 1/30/17 18:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	ND (1.25)		8270D SIM		1	01/31/17 12:58	C7A0395	CA73048
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		55 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.30.17
Date Sampled: 01/30/17 12:10
Percent Solids: N/A
Initial Volume: 950
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-01
Sample Matrix: Waste Water
Units: ug/L
Analyst: JXS
Prepared: 1/31/17 14:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	0.26 (0.21)		8270D SIM		1	01/31/17 23:28	C7A0410	CA73105

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	68 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	80 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	81 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	85 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_01.30.17
Date Sampled: 01/30/17 12:10
Percent Solids: N/A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4660 (1000)		300.0		2000	EEM	01/30/17 18:54	mg/L	CA73023
Total Cyanide (LL)	57.7 (5.00)		4500 CN CE		1	JLK	01/30/17 18:36	ug/L	CA73037
Total Suspended Solids	39 (5)		2540D		1	MJV	01/30/17 22:06	mg/L	CA73052



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.30.17
Date Sampled: 01/30/17 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-02
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Arsenic	EL ND (50.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034
Cadmium	EL ND (5.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034
Chromium III	ND (20)		6010C		5	JLK	01/31/17 13:45	1	1	[CALC]
Copper	EL ND (20.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034
Hardness	2370 (2.1)		6010B		10	KJK	01/31/17 15:58	1	1	[CALC]
Iron	ND (200)		6010C		10	BJV	01/31/17 13:58	50	10	CA73034
Lead	EL ND (20.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034
Nickel	EL ND (20.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034
Zinc	ND (50.0)		6010C		5	BJV	01/31/17 13:45	50	10	CA73034



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_01.30.17
 Date Sampled: 01/30/17 11:20
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1701591
 ESS Laboratory Sample ID: 1701591-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	2.8 (1.0)		8260B		1	01/31/17 13:28	C7A0411	CA73133
Trichloroethene	ND (1.0)		8260B		1	01/31/17 13:28	C7A0411	CA73133

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	109 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	113 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	115 %		70-130
<i>Surrogate: Toluene-d8</i>	104 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.30.17
Date Sampled: 01/30/17 11:20
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-02
Sample Matrix: Waste Water
Units: ug/L
Analyst: VSC
Prepared: 1/30/17 18:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.436 (0.250)		8270D SIM		1	01/31/17 13:34	C7A0395	CA73048
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		71 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_01.30.17
 Date Sampled: 01/30/17 11:20
 Percent Solids: N/A
 Initial Volume: 1070
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1701591
 ESS Laboratory Sample ID: 1701591-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: JXS
 Prepared: 1/31/17 14:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	02/01/17 0:18	C7A0410	CA73105

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	54 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	77 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	85 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	95 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_01.30.17
Date Sampled: 01/30/17 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701591
ESS Laboratory Sample ID: 1701591-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4980 (1000)		300.0		2000	EEM	01/30/17 19:10	mg/L	CA73023
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	JLK	01/30/17 18:36	ug/L	CA73037
Total Suspended Solids	14 (5)		2540D		1	MJV	01/30/17 22:06	mg/L	CA73052



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CA73034 - 3005A

Blank										
Calcium	ND	40.0	ug/L							
Chromium III	ND	4	ug/L							
Copper	ND	4.0	ug/L							
Hardness	ND	0.3	mg/L							
Iron	ND	20.0	ug/L							
Magnesium	ND	40.0	ug/L							
Nickel	ND	4.0	ug/L							
Zinc	ND	10.0	ug/L							

LCS										
Calcium	983	40.0	ug/L	1000		98	80-120			
Chromium III	91.0	4	ug/L							
Copper	99.1	4.0	ug/L	100.0		99	80-120			
Hardness	6.40	0.3	mg/L							
Iron	433	20.0	ug/L	500.0		87	80-120			
Magnesium	958	40.0	ug/L	1000		96	80-120			
Nickel	97.9	4.0	ug/L	100.0		98	80-120			
Zinc	101	10.0	ug/L	100.0		101	80-120			

LCS Dup										
Calcium	995	40.0	ug/L	1000		100	80-120	1	20	
Chromium III	94.0	4	ug/L							
Copper	100	4.0	ug/L	100.0		100	80-120	1	20	
Hardness	6.60	0.3	mg/L							
Iron	441	20.0	ug/L	500.0		88	80-120	2	20	
Magnesium	989	40.0	ug/L	1000		99	80-120	3	20	
Nickel	103	4.0	ug/L	100.0		103	80-120	5	20	
Zinc	105	10.0	ug/L	100.0		105	80-120	4	20	

Batch CA73038 - [CALC]

Blank										
Chromium III	ND	10	ug/L							

LCS										
Chromium III	ND		ug/L							

LCS Dup										
Chromium III	ND		ug/L							

8260B Volatile Organic Compounds

Batch CA73133 - 5030B

Blank										
1,2-Dichloroethane	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	27.6		ug/L	25.00		110	70-130			
Surrogate: 4-Bromofluorobenzene	26.8		ug/L	25.00		107	70-130			
Surrogate: Dibromofluoromethane	28.8		ug/L	25.00		115	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CA73133 - 5030B

<i>Surrogate: Toluene-d8</i>	25.7		ug/L	25.00		103	70-130			
LCS										
1,2-Dichloroethane	10.1		ug/L	10.00		101	70-130			
Trichloroethene	10.0		ug/L	10.00		100	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	26.6		ug/L	25.00		107	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	26.9		ug/L	25.00		108	70-130			
<i>Surrogate: Dibromofluoromethane</i>	26.2		ug/L	25.00		105	70-130			
<i>Surrogate: Toluene-d8</i>	25.6		ug/L	25.00		102	70-130			

LCS Dup										
1,2-Dichloroethane	9.8		ug/L	10.00		98	70-130	3	25	
Trichloroethene	10.3		ug/L	10.00		103	70-130	3	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	25.5		ug/L	25.00		102	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	26.0		ug/L	25.00		104	70-130			
<i>Surrogate: Dibromofluoromethane</i>	26.6		ug/L	25.00		106	70-130			
<i>Surrogate: Toluene-d8</i>	27.6		ug/L	25.00		110	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CA73048 - 3535A

Blank										
1,4-Dioxane	ND	0.250	ug/L							
<i>Surrogate: 1,4-Dioxane-d8</i>	2.22		ug/L	5.000		44	15-115			
LCS										
1,4-Dioxane	10.9	0.250	ug/L	10.00		109	40-140			
<i>Surrogate: 1,4-Dioxane-d8</i>	3.04		ug/L	5.000		61	15-115			
LCS Dup										
1,4-Dioxane	11.0	0.250	ug/L	10.00		110	40-140	0.9	20	
<i>Surrogate: 1,4-Dioxane-d8</i>	2.85		ug/L	5.000		57	15-115			

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CA73105 - 3510C

Blank										
Fluorene	ND	0.20	ug/L							
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	1.01		ug/L	2.500		40	30-130			
<i>Surrogate: 2-Fluorobiphenyl</i>	1.47		ug/L	2.500		59	30-130			
<i>Surrogate: Nitrobenzene-d5</i>	1.91		ug/L	2.500		77	30-130			
<i>Surrogate: p-Terphenyl-d14</i>	2.33		ug/L	2.500		93	30-130			
LCS										
Fluorene	2.94	0.20	ug/L	4.000		73	40-140			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	1.23		ug/L	2.500		49	30-130			
<i>Surrogate: 2-Fluorobiphenyl</i>	1.75		ug/L	2.500		70	30-130			
<i>Surrogate: Nitrobenzene-d5</i>	1.84		ug/L	2.500		74	30-130			
<i>Surrogate: p-Terphenyl-d14</i>	2.41		ug/L	2.500		96	30-130			
LCS Dup										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CA73105 - 3510C

Fluorene	3.44	0.20	ug/L	4.000		86	40-140	16	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.40		ug/L	2.500		56	30-130			
Surrogate: 2-Fluorobiphenyl	2.00		ug/L	2.500		80	30-130			
Surrogate: Nitrobenzene-d5	2.20		ug/L	2.500		88	30-130			
Surrogate: p-Terphenyl-d14	2.70		ug/L	2.500		108	30-130			

Classical Chemistry

Batch CA73023 - General Preparation

Blank										
Chloride	ND	0.5	mg/L							

LCS										
Chloride	2.3		mg/L	2.500		93	90-110			

Batch CA73037 - TCN Prep

Blank										
Total Cyanide (LL)	ND	5.00	ug/L							

LCS										
Total Cyanide (LL)	19.7	5.00	ug/L	20.06		98	90-110			

LCS										
Total Cyanide (LL)	150	5.00	ug/L	150.4		100	90-110			

LCS Dup										
Total Cyanide (LL)	148	5.00	ug/L	150.4		98	90-110	1	20	

Batch CA73052 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							

LCS										
Total Suspended Solids	64		mg/L	68.70		93	80-120			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

Notes and Definitions

- U Analyte included in the analysis, but not detected
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1701591

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/meecd/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>



CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1703039

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 6:11 pm, Mar 06, 2017

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: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

SAMPLE RECEIPT

The following samples were received on March 02, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1703039-01	Influent_03.02.17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 8260B, 8270D SIM
1703039-02	Effluent_03.02.17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 8260B, 8270D SIM



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

PROJECT NARRATIVE

8270D(SIM) Polynuclear Aromatic Hydrocarbon

CC70307-BLK1 [Blank Spike recovery is below lower control limit \(B-\).](#)
 1,2-Dichlorobenzene-d4 (28% @ 30-130%)

Total Metals

1703039-01 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
 Cadmium , Copper
 1703039-02 [Elevated Method Reporting Limits due to sample matrix \(EL\).](#)
 Arsenic , Cadmium , Copper , Lead , Nickel , Zinc

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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

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 / 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
- 5035 - 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: Wynn Everett - RGP
 Client Sample ID: Influent_03.02.17
 Date Sampled: 03/02/17 10:00
 Percent Solids: N/A

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-01
 Sample Matrix: Waste Water
 Units: ug/L

Extraction Method: 3005A

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>
Arsenic	232 (50.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Cadmium	EL ND (5.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Chromium III	ND (20)		6010C		5	JLK	03/03/17 17:38	1	1	[CALC]
Copper	EL ND (20.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Hardness	2990 (1.8)		6010B		10	KJK	03/03/17 17:49	1	1	[CALC]
Iron	333000 (100)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Lead	22.3 (20.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Nickel	58.1 (20.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213
Zinc	694 (50.0)		6010C		5	KJK	03/03/17 17:38	50	10	CC70213



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.02.17
 Date Sampled: 03/02/17 10:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	03/06/17 14:19	C7C0091	CC70636
Trichloroethene	ND (1.0)		8260B		1	03/06/17 14:19	C7C0091	CC70636

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	113 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	102 %		70-130
<i>Surrogate: Toluene-d8</i>	89 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.02.17
 Date Sampled: 03/02/17 10:00
 Percent Solids: N/A
 Initial Volume: 100
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 3/2/17 21:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.677 (0.400)		8270D SIM		1	03/03/17 16:39	C7C0061	CC70245
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		49 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.02.17
 Date Sampled: 03/02/17 10:00
 Percent Solids: N/A
 Initial Volume: 1050
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: IBM
 Prepared: 3/3/17 14:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	0.26 (0.19)		8270D SIM		1	03/03/17 20:21	C7C0061	CC70307

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	71 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	85 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	88 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	71 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_03.02.17
Date Sampled: 03/02/17 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1703039
ESS Laboratory Sample ID: 1703039-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4650 (500)		300.0		1000	EEM	03/03/17 13:54	mg/L	CC70314
Total Cyanide (LL)	50.0 (5.00)		4500 CN CE		1	EEM	03/03/17 11:50	ug/L	CC70315
Total Suspended Solids	15 (5)		2540D		1	JLK	03/02/17 20:31	mg/L	CC70254



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.02.17
 Date Sampled: 03/02/17 09:45
 Percent Solids: N/A

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-02
 Sample Matrix: Waste Water
 Units: ug/L

Extraction Method: 3005A

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>
Arsenic	EL ND (50.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Cadmium	EL ND (5.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Chromium III	ND (20)		6010C		5	JLK	03/03/17 17:43	1	1	[CALC]
Copper	EL ND (20.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Hardness	1740 (1.3)		6010B		5	KJK	03/03/17 17:43	1	1	[CALC]
Iron	240 (100)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Lead	EL ND (20.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Nickel	EL ND (20.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213
Zinc	EL ND (50.0)		6010C		5	KJK	03/03/17 17:43	50	10	CC70213



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.02.17
 Date Sampled: 03/02/17 09:45
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: GEM

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	9.0 (1.0)		8260B		1	03/06/17 14:45	C7C0091	CC70636
Trichloroethene	ND (1.0)		8260B		1	03/06/17 14:45	C7C0091	CC70636

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	110 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	101 %		70-130
<i>Surrogate: Toluene-d8</i>	82 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.02.17
 Date Sampled: 03/02/17 09:45
 Percent Solids: N/A
 Initial Volume: 500
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 3/2/17 21:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.523 (0.250)		8270D SIM		1	03/03/17 17:15	C7C0061	CC70245
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		56 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.02.17
 Date Sampled: 03/02/17 09:45
 Percent Solids: N/A
 Initial Volume: 1070
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1703039
 ESS Laboratory Sample ID: 1703039-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: IBM
 Prepared: 3/3/17 14:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	03/03/17 21:11	C7C0061	CC70307

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	58 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	75 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	88 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	97 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_03.02.17
Date Sampled: 03/02/17 09:45
Percent Solids: N/A

ESS Laboratory Work Order: 1703039
ESS Laboratory Sample ID: 1703039-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	3850 (500)		300.0		1000	EEM	03/03/17 14:10	mg/L	CC70314
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	03/03/17 11:50	ug/L	CC70315
Total Suspended Solids	5 (5)		2540D		1	JLK	03/02/17 20:31	mg/L	CC70254



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CC70213 - 3005A

Blank										
Calcium	ND	40.0	ug/L							
Chromium III	ND	4	ug/L							
Copper	ND	4.0	ug/L							
Hardness	ND	0.3	mg/L							
Iron	ND	20.0	ug/L							
Magnesium	ND	40.0	ug/L							
Nickel	ND	4.0	ug/L							
Zinc	ND	10.0	ug/L							

LCS										
Calcium	983	40.0	ug/L	1000		98	80-120			
Chromium III	100	4	ug/L							
Copper	97.4	4.0	ug/L	100.0		97	80-120			
Hardness	6.50	0.3	mg/L							
Iron	496	20.0	ug/L	500.0		99	80-120			
Magnesium	987	40.0	ug/L	1000		99	80-120			
Nickel	90.6	4.0	ug/L	100.0		91	80-120			
Zinc	95.6	10.0	ug/L	100.0		96	80-120			

LCS Dup										
Calcium	953	40.0	ug/L	1000		95	80-120	3	20	
Chromium III	100	4	ug/L							
Copper	97.8	4.0	ug/L	100.0		98	80-120	0.4	20	
Hardness	6.40	0.3	mg/L							
Iron	490	20.0	ug/L	500.0		98	80-120	1	20	
Magnesium	965	40.0	ug/L	1000		97	80-120	2	20	
Nickel	91.8	4.0	ug/L	100.0		92	80-120	1	20	
Zinc	96.0	10.0	ug/L	100.0		96	80-120	0.4	20	

Batch CC70243 - [CALC]

Blank										
Chromium III	ND	10	ug/L							

LCS										
Chromium III	ND		ug/L							

LCS Dup										
Chromium III	ND		ug/L							

8260B Volatile Organic Compounds

Batch CC70636 - 5030B

Blank										
1,2-Dichloroethane	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	27.0		ug/L	25.00		108	70-130			
Surrogate: 4-Bromofluorobenzene	25.0		ug/L	25.00		100	70-130			
Surrogate: Dibromofluoromethane	25.5		ug/L	25.00		102	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch CC70636 - 5030B

<i>Surrogate: Toluene-d8</i>	22.0		ug/L	25.00		88	70-130			
LCS										
1,2-Dichloroethane	12.5		ug/L	10.00		125	70-130			
Trichloroethene	11.8		ug/L	10.00		118	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	29.9		ug/L	25.00		120	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	26.2		ug/L	25.00		105	70-130			
<i>Surrogate: Dibromofluoromethane</i>	27.8		ug/L	25.00		111	70-130			
<i>Surrogate: Toluene-d8</i>	24.9		ug/L	25.00		100	70-130			

LCS Dup										
1,2-Dichloroethane	11.0		ug/L	10.00		110	70-130	13	25	
Trichloroethene	10.8		ug/L	10.00		108	70-130	9	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	28.4		ug/L	25.00		114	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	27.8		ug/L	25.00		111	70-130			
<i>Surrogate: Dibromofluoromethane</i>	26.2		ug/L	25.00		105	70-130			
<i>Surrogate: Toluene-d8</i>	26.2		ug/L	25.00		105	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CC70245 - 3535A

Blank										
1,4-Dioxane	ND	0.250	ug/L							
<i>Surrogate: 1,4-Dioxane-d8</i>	2.63		ug/L	5.000		53	15-115			
LCS										
1,4-Dioxane	11.0	0.250	ug/L	10.00		110	40-140			
<i>Surrogate: 1,4-Dioxane-d8</i>	3.34		ug/L	5.000		67	15-115			
LCS Dup										
1,4-Dioxane	10.8	0.250	ug/L	10.00		108	40-140	3	20	
<i>Surrogate: 1,4-Dioxane-d8</i>	3.41		ug/L	5.000		68	15-115			

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CC70307 - 3510C

Blank										
Fluorene	ND	0.20	ug/L							
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	0.702		ug/L	2.500		28	30-130			B-
<i>Surrogate: 2-Fluorobiphenyl</i>	1.12		ug/L	2.500		45	30-130			
<i>Surrogate: Nitrobenzene-d5</i>	1.52		ug/L	2.500		61	30-130			
<i>Surrogate: p-Terphenyl-d14</i>	1.77		ug/L	2.500		71	30-130			
LCS										
Fluorene	3.15	0.20	ug/L	4.000		79	40-140			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	0.935		ug/L	2.500		37	30-130			
<i>Surrogate: 2-Fluorobiphenyl</i>	1.46		ug/L	2.500		58	30-130			
<i>Surrogate: Nitrobenzene-d5</i>	1.88		ug/L	2.500		75	30-130			
<i>Surrogate: p-Terphenyl-d14</i>	2.12		ug/L	2.500		85	30-130			
LCS Dup										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CC70307 - 3510C

Fluorene	3.39	0.20	ug/L	4.000		85	40-140	7	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.47		ug/L	2.500		59	30-130			
Surrogate: 2-Fluorobiphenyl	2.01		ug/L	2.500		80	30-130			
Surrogate: Nitrobenzene-d5	2.04		ug/L	2.500		81	30-130			
Surrogate: p-Terphenyl-d14	2.37		ug/L	2.500		95	30-130			

Classical Chemistry

Batch CC70254 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							

LCS										
Total Suspended Solids	66		mg/L	68.70		96	80-120			

Batch CC70314 - General Preparation

Blank										
Chloride	ND	0.5	mg/L							

LCS										
Chloride	2.6		mg/L	2.500		105	90-110			

Batch CC70315 - TCN Prep

Blank										
Total Cyanide (LL)	ND	5.00	ug/L							

LCS										
Total Cyanide (LL)	20.3	5.00	ug/L	20.06		101	90-110			

LCS										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110			

LCS Dup										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110	0.5	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

Notes and Definitions

- U Analyte included in the analysis, but not detected
- EL Elevated Method Reporting Limits due to sample matrix (EL).
- D Diluted.
- B- Blank Spike recovery is below lower control limit (B-).
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703039

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/meecd/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 - Norwood, MA - GZA/MM
 Shipped/Delivered Via: ESS Courier

ESS Project ID: 1703039
 Date Received: 3/2/2017
 Project Due Date: 3/6/2017
 Days for Project: 2 Day

- | | |
|--|--|
| 1. Air bill manifest present? <input type="checkbox"/> No
Air No.: <u>NA</u>
2. Were custody seals present? <input type="checkbox"/> No
3. Is radiation count <100 CPM? <input type="checkbox"/> Yes
4. Is a Cooler Present? <input type="checkbox"/> Yes
Temp: <u>2.8</u> Iced with: <u>Ice</u>
5. Was COC signed and dated by client? <input type="checkbox"/> Yes | 6. Does COC match bottles? <input type="checkbox"/> Yes
7. Is COC complete and correct? <input type="checkbox"/> Yes
8. Were samples received intact? <input type="checkbox"/> Yes
9. Were labs informed about short holds & rushes? <input checked="" type="checkbox"/> Yes / No / NA
10. Were any analyses received outside of hold time? Yes <input checked="" type="checkbox"/> No |
|--|--|

- | | |
|---|---|
| 11. Any Subcontracting needed? Yes / <input checked="" type="checkbox"/> No
ESS Sample IDs: _____
Analysis: _____
TAT: _____ | 12. Were VOAs received? <input checked="" type="checkbox"/> Yes / No
a. Air bubbles in aqueous VOAs? Yes / <input checked="" type="checkbox"/> No
b. Does methanol cover soil completely? Yes / No / <input checked="" type="checkbox"/> 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)
01	107723	Yes	No	Yes	VOA Vial - HCl	HCl	
01	107724	Yes	No	Yes	VOA Vial - HCl	HCl	
01	107725	Yes	No	Yes	VOA Vial - HCl	HCl	
01	107729	Yes	NA	Yes	1L Amber - Unpres	NP	
01	107730	Yes	NA	Yes	1L Amber - Unpres	NP	
01	107731	Yes	NA	Yes	1L Amber - Unpres	NP	
01	107733	Yes	NA	Yes	1L Poly - Unpres	NP	
01	107735	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	107737	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH = 10 RL 3/2/17 1812
01	107739	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	107935	Yes	NA	Yes	1L Amber - Unpres	NP	
02	107717	Yes	No	Yes	VOA Vial - HCl	HCl	
02	107718	Yes	No	Yes	VOA Vial - HCl	HCl	
02	107719	Yes	No	Yes	VOA Vial - HCl	HCl	
02	107726	Yes	NA	Yes	1L Amber - Unpres	NP	
02	107727	Yes	NA	Yes	1L Amber - Unpres	NP	
02	107728	Yes	NA	Yes	1L Amber - Unpres	NP	
02	107732	Yes	NA	Yes	1L Poly - Unpres	NP	
02	107734	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	107736	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH > 12 RL 3/2/17 1812
02	107738	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	107934	Yes	NA	Yes	1L Amber - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/MM

ESS Project ID: 1703039

Date Received: 3/2/2017

2nd Review

Are barcode labels on correct containers?

Yes No

Completed

By: [Signature]

Date & Time: 3/2/17 1813

Reviewed

By: [Signature]

Date & Time: 3/2/17 1845

Delivered

By: [Signature]

3/2/17 1845



CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1703683

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 1:11 pm, Apr 06, 2017

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: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

SAMPLE RECEIPT

The following samples were received on March 28, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1703683-01	Influent_03.28.2017	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM
1703683-02	Effluent_03.28.2017	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

PROJECT NARRATIVE

8270D(SIM) Polynuclear Aromatic Hydrocarbon

CC72918-BSD1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)

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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

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 / 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
- 5035 - 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: Wynn Everett - RGP
 Client Sample ID: Influent_03.28.2017
 Date Sampled: 03/28/17 08:30
 Percent Solids: N/A

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-01
 Sample Matrix: Waste Water
 Units: ug/L

Extraction Method: 3005A/200.7

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>
Arsenic	323 (50.0)		7010		50	KJK	04/01/17 19:54	50	10	CC73001
Cadmium	1.8 (1.2)		7010		12	KJK	03/31/17 14:51	50	10	CC73001
Chromium III	ND (10)		6010C		2	JLK	03/31/17 13:11	1	1	[CALC]
Copper	ND (8.0)		6010C		2	KJK	03/31/17 13:11	50	10	CC73001
Hardness	1150 (1.3)		6010B		1	KJK	03/30/17 1:40	1	1	[CALC]
Iron	180000 (40.0)		6010C		2	KJK	03/31/17 13:11	50	10	CC73001
Lead	ND (2.0)		7010		5	KJK	03/31/17 20:36	50	10	CC73001
Nickel	ND (8.0)		6010C		2	KJK	03/31/17 13:11	50	10	CC73001
Zinc	258 (20.0)		6010C		2	KJK	03/31/17 13:11	50	10	CC73001



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.28.2017
 Date Sampled: 03/28/17 08:30
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	03/29/17 19:39	C7C0462	CC72941
Trichloroethene	ND (1.0)		8260B		1	03/29/17 19:39	C7C0462	CC72941

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	92 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	105 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	103 %		70-130
<i>Surrogate: Toluene-d8</i>	98 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.28.2017
 Date Sampled: 03/28/17 08:30
 Percent Solids: N/A
 Initial Volume: 500
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 3/29/17 19:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	ND (0.250)		8270D SIM		1	03/30/17 16:42	C7C0482	CC72972
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		57 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_03.28.2017
 Date Sampled: 03/28/17 08:30
 Percent Solids: N/A
 Initial Volume: 960
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 3/30/17 14:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.21)		8270D SIM		1	03/30/17 15:13	C7C0482	CC72918

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	73 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	87 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	82 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	88 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_03.28.2017
Date Sampled: 03/28/17 08:30
Percent Solids: N/A

ESS Laboratory Work Order: 1703683
ESS Laboratory Sample ID: 1703683-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	1600 (500)		300.0		1000	EEM	03/29/17 15:39	mg/L	CC72928
Total Cyanide (LL)	113 (5.00)		4500 CN CE		1	EEM	03/29/17 11:15	ug/L	CC72929
Total Suspended Solids	22 (5)		2540D		1	EEM	03/29/17 17:10	mg/L	CC72931



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_03.28.2017
Date Sampled: 03/28/17 09:00
Percent Solids: N/A

ESS Laboratory Work Order: 1703683
ESS Laboratory Sample ID: 1703683-02
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A/200.7

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>
Arsenic	ND (4.0)		7010		4	KJK	04/01/17 20:00	50	10	CC73001
Cadmium	0.6 (0.4)		7010		4	KJK	03/31/17 14:57	50	10	CC73001
Chromium III	ND (10)		6010C		2	JLK	03/31/17 13:17	1	1	[CALC]
Copper	11.8 (8.0)		6010C		2	KJK	03/31/17 13:17	50	10	CC73001
Hardness	1740 (1.3)		6010B		1	KJK	03/30/17 1:44	1	1	[CALC]
Iron	116 (100)		6010C		5	KJK	04/05/17 14:25	50	10	CC73001
Lead	ND (2.0)		7010		5	KJK	03/31/17 20:49	50	10	CC73001
Nickel	ND (8.0)		6010C		2	KJK	03/31/17 13:17	50	10	CC73001
Zinc	ND (20.0)		6010C		2	KJK	03/31/17 13:17	50	10	CC73001



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.28.2017
 Date Sampled: 03/28/17 09:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	03/29/17 19:12	C7C0462	CC72941
Trichloroethene	ND (1.0)		8260B		1	03/29/17 19:12	C7C0462	CC72941

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>95 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>100 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>102 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>99 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.28.2017
 Date Sampled: 03/28/17 09:00
 Percent Solids: N/A
 Initial Volume: 500
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: IBM
 Prepared: 3/29/17 19:00

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.361 (0.250)		8270D SIM		1	03/30/17 17:21	C7C0482	CC72972
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		58 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_03.28.2017
 Date Sampled: 03/28/17 09:00
 Percent Solids: N/A
 Initial Volume: 1060
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1703683
 ESS Laboratory Sample ID: 1703683-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 3/29/17 12:05

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	03/29/17 19:45	C7C0464	CC72918

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	39 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	55 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	68 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	82 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_03.28.2017
Date Sampled: 03/28/17 09:00
Percent Solids: N/A

ESS Laboratory Work Order: 1703683
ESS Laboratory Sample ID: 1703683-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4460 (500)		300.0		1000	EEM	03/29/17 15:56	mg/L	CC72928
Total Cyanide (LL)	14.8 (5.00)		4500 CN CE		1	EEM	03/29/17 11:15	ug/L	CC72929
Total Suspended Solids	11 (5)		2540D		1	EEM	03/29/17 17:10	mg/L	CC72931



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CC72861 - [CALC]										
Blank										
Chromium III	ND	10	ug/L							
LCS										
Chromium III	ND		ug/L							
LCS Dup										
Chromium III	ND		ug/L							
Batch CC72902 - 3005A										
Blank										
Calcium	ND	200	ug/L							
Hardness	ND	1.3	mg/L							
Magnesium	ND	200	ug/L							
LCS										
Calcium	4720	200	ug/L	5000		94	80-120			
Hardness	31.6	1.3	mg/L							
Magnesium	4810	200	ug/L	5000		96	80-120			
LCS Dup										
Calcium	4230	200	ug/L	5000		85	80-120	11	20	
Hardness	28.4	1.3	mg/L							
Magnesium	4330	200	ug/L	5000		87	80-120	10	20	
Batch CC73001 - 3005A/200.7										
Blank										
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.1	ug/L							
Chromium III	ND	4	ug/L							
Copper	ND	4.0	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	0.4	ug/L							
Nickel	ND	4.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Arsenic	111	25.0	ug/L	100.0		111	80-120			
Cadmium	50.8	50.0	ug/L	50.00		102	80-120			
Chromium III	101	4	ug/L							
Copper	99.6	4.0	ug/L	100.0		100	80-120			
Iron	492	20.0	ug/L	500.0		98	80-120			
Lead	119	10.0	ug/L	100.0		119	80-120			
Nickel	101	4.0	ug/L	100.0		101	80-120			
Zinc	99.0	10.0	ug/L	100.0		99	80-120			
LCS Dup										
Arsenic	108	25.0	ug/L	100.0		108	80-120	3	20	
Cadmium	50.1	50.0	ug/L	50.00		100	80-120	1	20	
Chromium III	100	4	ug/L							
Copper	99.1	4.0	ug/L	100.0		99	80-120	0.5	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Total Metals

Batch CC73001 - 3005A/200.7

Iron	493	20.0	ug/L	500.0		99	80-120	0.1	20	
Lead	108	10.0	ug/L	100.0		108	80-120	9	20	
Nickel	101	4.0	ug/L	100.0		101	80-120	0.2	20	
Zinc	98.7	10.0	ug/L	100.0		99	80-120	0.3	20	

8260B Volatile Organic Compounds

Batch CC72941 - 5030B

Blank										
1,2-Dichloroethane	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	23.4		ug/L	25.00		94	70-130			
Surrogate: 4-Bromofluorobenzene	25.2		ug/L	25.00		101	70-130			
Surrogate: Dibromofluoromethane	25.6		ug/L	25.00		102	70-130			
Surrogate: Toluene-d8	24.4		ug/L	25.00		98	70-130			

LCS										
1,2-Dichloroethane	9.9		ug/L	10.00		99	70-130			
Trichloroethene	10.0		ug/L	10.00		100	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.0		ug/L	25.00		100	70-130			
Surrogate: 4-Bromofluorobenzene	26.2		ug/L	25.00		105	70-130			
Surrogate: Dibromofluoromethane	27.2		ug/L	25.00		109	70-130			
Surrogate: Toluene-d8	26.0		ug/L	25.00		104	70-130			

LCS Dup										
1,2-Dichloroethane	10.3		ug/L	10.00		103	70-130	4	25	
Trichloroethene	9.8		ug/L	10.00		98	70-130	2	25	
Surrogate: 1,2-Dichloroethane-d4	26.3		ug/L	25.00		105	70-130			
Surrogate: 4-Bromofluorobenzene	26.9		ug/L	25.00		108	70-130			
Surrogate: Dibromofluoromethane	27.5		ug/L	25.00		110	70-130			
Surrogate: Toluene-d8	26.4		ug/L	25.00		105	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CC72972 - 3535A

Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	2.46		ug/L	5.000		49	15-115			

LCS										
1,4-Dioxane	11.1	0.250	ug/L	10.00		111	40-140			
Surrogate: 1,4-Dioxane-d8	2.86		ug/L	5.000		57	15-115			

LCS Dup										
1,4-Dioxane	11.4	0.250	ug/L	10.00		114	40-140	2	20	
Surrogate: 1,4-Dioxane-d8	3.04		ug/L	5.000		61	15-115			

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CC72918 - 3510C



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CC72918 - 3510C

Blank										
Fluorene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	1.05		ug/L	2.500		42	30-130			
Surrogate: 2-Fluorobiphenyl	1.50		ug/L	2.500		60	30-130			
Surrogate: Nitrobenzene-d5	1.64		ug/L	2.500		65	30-130			
Surrogate: p-Terphenyl-d14	1.98		ug/L	2.500		79	30-130			

LCS										
Fluorene	2.64	0.20	ug/L	4.000		66	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	1.25		ug/L	2.500		50	30-130			
Surrogate: 2-Fluorobiphenyl	1.78		ug/L	2.500		71	30-130			
Surrogate: Nitrobenzene-d5	1.93		ug/L	2.500		77	30-130			
Surrogate: p-Terphenyl-d14	1.96		ug/L	2.500		78	30-130			

LCS Dup										
Fluorene	3.34	0.20	ug/L	4.000		84	40-140	24	20	D+
Surrogate: 1,2-Dichlorobenzene-d4	1.37		ug/L	2.500		55	30-130			
Surrogate: 2-Fluorobiphenyl	2.04		ug/L	2.500		82	30-130			
Surrogate: Nitrobenzene-d5	1.93		ug/L	2.500		77	30-130			
Surrogate: p-Terphenyl-d14	2.28		ug/L	2.500		91	30-130			

Classical Chemistry

Batch CC72928 - General Preparation

Blank										
Chloride	ND	0.5	mg/L							

LCS										
Chloride	2.3		mg/L	2.500		91	90-110			

Batch CC72929 - TCN Prep

Blank										
Total Cyanide (LL)	ND	5.00	ug/L							

LCS										
Total Cyanide (LL)	20.8	5.00	ug/L	20.06		104	90-110			

LCS										
Total Cyanide (LL)	150	5.00	ug/L	150.4		100	90-110			

LCS Dup										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110	0.7	20	

Batch CC72931 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							

LCS										
Total Suspended Solids	66		mg/L	68.70		96	80-120			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1703683

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/meecd/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 - Norwood, MA - GZA/MM

ESS Project ID: 1703683

Shipped/Delivered Via: ESS Courier

Date Received: 3/28/2017

Project Due Date: 3/30/2017

Days for Project: 2 Day

1. Air bill manifest present? No
Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
Temp: 3.0 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)
01	113586	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	113587	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH > 12 w 3/28/17 1859
01	113589	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	113591	Yes	NA	Yes	500 mL Poly - Unpres	NP	
01	113593	Yes	NA	Yes	1L Amber - Unpres	NP	
01	113599	Yes	No	Yes	VOA Vial - HCl	HCl	
01	113600	Yes	No	Yes	VOA Vial - HCl	HCl	
01	113601	Yes	No	Yes	VOA Vial - HCl	HCl	
01	113606	Yes	NA	Yes	1L Amber - Unpres	NP	
01	113607	Yes	NA	Yes	1L Amber - Unpres	NP	
01	113608	Yes	NA	Yes	1L Amber - Unpres	NP	
02	113585	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	113588	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	113590	Yes	NA	Yes	500 mL Poly - Unpres	NP	
02	113592	Yes	NA	Yes	1L Amber - Unpres	NP	
02	113594	Yes	No	Yes	VOA Vial - HCl	HCl	
02	113595	Yes	No	Yes	VOA Vial - HCl	HCl	
02	113596	Yes	No	Yes	VOA Vial - HCl	HCl	
02	113602	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH > 12 w 3/28/17 1859
02	113603	Yes	NA	Yes	1L Amber - Unpres	NP	
02	113604	Yes	NA	Yes	1L Amber - Unpres	NP	
02	113605	Yes	NA	Yes	1L Amber - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/MM

ESS Project ID: 1703683

Date Received: 3/28/2017

2nd Review

Are barcode labels on correct containers?

Yes / No

Completed

By: [Signature]

Date & Time: 3/28/17 1900

Reviewed

By: [Signature]

Date & Time: 3/28/17 1910

Delivered

By: [Signature]

Date & Time: 3/28/17 1910

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston RI 02910
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time 5-Day Rush 2-Day

Regulatory State

Is this project for any of the following?
 CT RCP MA MCP RGP

Company Name: GZA GeoEnvironmental, Inc.
 Contact Person: Matt Smith / Neal Carey
 City: Norwood
 Telephone Number: 781-278-3700
 State: Massachusetts
 Project Name: Wynn Boston Harbor
 Address: 249 Vanderbilt Ave
 Zip Code: 02062
 PO #: --
 Email Address: Matthew.Smith@gza.com, Neal.Carey@gza.com

ESS Lab # **1783683**

Reporting Limits RGP Limit; Appendix VI

Electronic Deliverables Limit Checker Standard Excel Other (Please Specify ->)

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis															
						RGP Metals, Hardness	Chloride 300.0	Total Cyanide 4500 LL	TSS 2540 D	Tri Cr. (Calc. Must run T.C)	Hex Cr 7196A	1,2 Dichloroethane	Trichloroethene	1,4 Dioxane 8270	Fluorene						
1	3-28-2017	0830	GRAB	WASTE WATER	Influent - 3.28.2017	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	3-28-2017	0900	GRAB	WASTE WATER	Effluent - 3.28.2017	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Laboratory Use Only

Cooler Present:
 Seals Intact:
 Cooler Temperature: Telnet 30 °C (83) 3/28/17
 Relinquished by: (Signature, Date & Time) Matthew Dwin 3/28-2017
 Relinquished by: (Signature, Date & Time) Matthew Dwin 3/28-2017

Sampled by: MATTHEW DWIN
 Comments: Please specify "Other" preservative and containers types in this space
 1.) RGP Metals include As, Cd, Cu, Pb, Ni, Zn, and Fe by 6020. 2.) Parameters in BOLD have short hold-time. 3.) Use RGP approved methods for all analysis 4.) Please analyze for but do not report Hex Chrom
 Relinquished By: (Signature, Date & Time) Matthew Dwin 3/28/17
 Relinquished By: (Signature, Date & Time) Matthew Dwin 3/28/17

CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1704303

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 2:33 pm, Apr 14, 2017***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: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

SAMPLE RECEIPT

The following samples were received on April 12, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1704303-01	Effluent_04.12.17	Waste Water	4500 CN CE, 6010C
1704303-02	Influent_04.12.17	Waste Water	4500 CN CE, 6010C



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

PROJECT NARRATIVE

No unusual 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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

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 / 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
- 5035 - 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: Wynn Everett - RGP
Client Sample ID: Effluent_04.12.17
Date Sampled: 04/12/17 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1704303
ESS Laboratory Sample ID: 1704303-01
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Copper	53.1 (20.0)		6010C		1	KJK	04/13/17 23:32	50	50	CD71243



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_04.12.17
Date Sampled: 04/12/17 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1704303
ESS Laboratory Sample ID: 1704303-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	04/13/17 12:05	ug/L	CD71314



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_04.12.17
Date Sampled: 04/12/17 10:15
Percent Solids: N/A

ESS Laboratory Work Order: 1704303
ESS Laboratory Sample ID: 1704303-02
Sample Matrix: Waste Water
Units: ug/L

Extraction Method: 3005A

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>
Copper	ND (20.0)		6010C		1	KJK	04/13/17 23:38	50	50	CD71243



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_04.12.17
Date Sampled: 04/12/17 10:15
Percent Solids: N/A

ESS Laboratory Work Order: 1704303
ESS Laboratory Sample ID: 1704303-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	04/13/17 12:05	ug/L	CD71314



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Total Metals

Batch CD71243 - 3005A

Blank										
Copper	ND	20.0	ug/L							
Blank										
Copper	ND	10.0	ug/L							
LCS										
Copper	514	20.0	ug/L	500.0		103	80-120			
LCS										
Copper	238	10.0	ug/L	250.0		95	80-120			
LCS Dup										
Copper	485	20.0	ug/L	500.0		97	80-120	6	20	
LCS Dup										
Copper	238	10.0	ug/L	250.0		95	80-120	0.1	20	

Classical Chemistry

Batch CD71314 - TCN Prep

Blank										
Total Cyanide (LL)	ND	5.00	ug/L							
LCS										
Total Cyanide (LL)	20.1	5.00	ug/L	20.06		100	90-110			
LCS										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110			
LCS Dup										
Total Cyanide (LL)	148	5.00	ug/L	150.4		98	90-110	0.7	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.

Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

Notes and Definitions

- U Analyte included in the analysis, but not detected
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704303

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>

CERTIFICATE OF ANALYSIS

Matt Smith
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: Wynn Everett - RGP (01.0171521.52)
ESS Laboratory Work Order Number: 1704793

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 5:50 pm, May 08, 2017

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: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

SAMPLE RECEIPT

The following samples were received on April 28, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2010 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
1704793-01	Influent_04/28/17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM
1704793-02	Effluent_04/28/17	Waste Water	2540D, 300.0, 4500 CN CE, 6010B, 6010C, 7010, 8260B, 8270D SIM



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

PROJECT NARRATIVE

Total Metals

CD72844-BSD2 [Blank Spike recovery is below lower control limit \(B-\).](#)
Arsenic (78% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[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](#)



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

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 / 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
- 5035 - 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: Wynn Everett - RGP
 Client Sample ID: Influent_04/28/17
 Date Sampled: 04/28/17 10:00
 Percent Solids: N/A

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-01
 Sample Matrix: Waste Water
 Units: ug/L

Extraction Method: 3005A

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>
Arsenic	78.2 (10.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844
Cadmium	ND (0.5)		7010		5	KJK	05/04/17 19:41	50	10	CD72844
Chromium III	ND (10)		6010C		1	JLK	04/29/17 21:42	1	1	[CALC]
Copper	ND (4.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844
Hardness	2890 (13.2)		6010B		50	BJV	05/02/17 11:50	1	1	[CALC]
Iron	66700 (20.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844
Lead	ND (4.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844
Nickel	ND (4.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844
Zinc	32.8 (10.0)		6010C		1	KJK	04/29/17 21:42	50	10	CD72844



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_04/28/17
 Date Sampled: 04/28/17 10:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	05/02/17 13:04	C7E0036	CE70228
Trichloroethene	ND (1.0)		8260B		1	05/02/17 13:04	C7E0036	CE70228

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	101 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	95 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	96 %		70-130
<i>Surrogate: Toluene-d8</i>	104 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_04/28/17
 Date Sampled: 04/28/17 10:00
 Percent Solids: N/A
 Initial Volume: 100
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 5/1/17 10:45

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.828 (0.625)		8270D SIM		1	05/02/17 14:30	C7E0025	CE70133
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		73 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Influent_04/28/17
 Date Sampled: 04/28/17 10:00
 Percent Solids: N/A
 Initial Volume: 990
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-01
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 5/1/17 16:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.20)		8270D SIM		1	05/02/17 19:52	C7E0026	CE70125

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	65 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	71 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	74 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	76 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Influent_04/28/17
Date Sampled: 04/28/17 10:00
Percent Solids: N/A

ESS Laboratory Work Order: 1704793
ESS Laboratory Sample ID: 1704793-01
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	5000 (2500)		300.0		5000	EEM	05/01/17 18:09	mg/L	CE70137
Total Cyanide (LL)	28.4 (5.00)		4500 CN CE		1	EEM	05/01/17 14:10	ug/L	CE70139
Total Suspended Solids	31 (5)		2540D		1	EEM	05/01/17 17:30	mg/L	CE70138



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_04/28/17
 Date Sampled: 04/28/17 11:00
 Percent Solids: N/A

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-02
 Sample Matrix: Waste Water
 Units: ug/L

Extraction Method: 3005A

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>
Arsenic	14.4 (10.0)		6010C		1	KJK	04/29/17 21:48	50	10	CD72844
Cadmium	ND (0.5)		7010		5	KJK	05/04/17 19:35	50	10	CD72844
Chromium III	ND (10)		6010C		1	JLK	04/29/17 21:48	1	1	[CALC]
Copper	24.8 (20.0)		6010C		10	KJK	05/01/17 15:53	50	10	CD72844
Hardness	2610 (2.6)		6010B		10	KJK	05/01/17 15:53	1	1	[CALC]
Iron	292 (200)		6010C		10	KJK	05/01/17 15:53	50	10	CD72844
Lead	9.7 (4.0)		6010C		1	KJK	04/29/17 21:48	50	10	CD72844
Nickel	ND (4.0)		6010C		1	KJK	04/29/17 21:48	50	10	CD72844
Zinc	ND (10.0)		6010C		1	KJK	04/29/17 21:48	50	10	CD72844



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_04/28/17
 Date Sampled: 04/28/17 11:00
 Percent Solids: N/A
 Initial Volume: 5
 Final Volume: 5
 Extraction Method: 5030B

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,2-Dichloroethane	ND (1.0)		8260B		1	05/02/17 12:38	C7E0036	CE70228
Trichloroethene	ND (1.0)		8260B		1	05/02/17 12:38	C7E0036	CE70228

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>103 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>100 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>110 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_04/28/17
 Date Sampled: 04/28/17 11:00
 Percent Solids: N/A
 Initial Volume: 500
 Final Volume: 0.5
 Extraction Method: 3535A

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 5/1/17 10:45

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,4-Dioxane	0.582 (0.250)		8270D SIM		1	05/03/17 5:35	C7E0043	CE70133
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: 1,4-Dioxane-d8</i>		66 %		15-115				



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: Wynn Everett - RGP
 Client Sample ID: Effluent_04/28/17
 Date Sampled: 04/28/17 11:00
 Percent Solids: N/A
 Initial Volume: 1060
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 1704793
 ESS Laboratory Sample ID: 1704793-02
 Sample Matrix: Waste Water
 Units: ug/L
 Analyst: VSC
 Prepared: 5/1/17 16:00

8270D(SIM) Polynuclear Aromatic Hydrocarbon

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Fluorene	ND (0.19)		8270D SIM		1	05/02/17 20:42	C7E0026	CE70125

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	66 %		30-130
<i>Surrogate: 2-Fluorobiphenyl</i>	80 %		30-130
<i>Surrogate: Nitrobenzene-d5</i>	82 %		30-130
<i>Surrogate: p-Terphenyl-d14</i>	78 %		30-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP
Client Sample ID: Effluent_04/28/17
Date Sampled: 04/28/17 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 1704793
ESS Laboratory Sample ID: 1704793-02
Sample Matrix: Waste Water

Classical Chemistry

<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>Units</u>	<u>Batch</u>
Chloride	4940 (500)		300.0		1000	EEM	05/01/17 15:43	mg/L	CE70137
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	05/01/17 14:10	ug/L	CE70139
Total Suspended Solids	16 (5)		2540D		1	EEM	05/01/17 17:30	mg/L	CE70138



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CD72844 - 3005A										
Blank										
Calcium	ND	200	ug/L							
Chromium III	ND	20	ug/L							
Hardness	ND	1.3	mg/L							
Magnesium	ND	200	ug/L							
Blank										
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.1	ug/L							
Chromium III	ND	4	ug/L							
Copper	ND	4.0	ug/L							
Iron	ND	20.0	ug/L							
Nickel	ND	4.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Calcium	5060	200	ug/L	5000		101	80-120			
Chromium III	511	20	ug/L							
Hardness	33.3	1.3	mg/L							
Magnesium	5030	200	ug/L	5000		101	80-120			
LCS										
Arsenic	81.2	25.0	ug/L	100.0		81	80-120			
Cadmium	46.7	50.0	ug/L	50.00		93	80-120			
Chromium III	98.0	4	ug/L							
Copper	111	4.0	ug/L	100.0		111	80-120			
Iron	474	20.0	ug/L	500.0		95	80-120			
Nickel	102	4.0	ug/L	100.0		102	80-120			
Zinc	94.9	10.0	ug/L	100.0		95	80-120			
LCS Dup										
Calcium	5150	200	ug/L	5000		103	80-120	2	20	
Chromium III	519	20	ug/L							
Hardness	34.5	1.3	mg/L							
Magnesium	5240	200	ug/L	5000		105	80-120	4	20	
LCS Dup										
Arsenic	78.4	25.0	ug/L	100.0		78	80-120	3	20	B-
Cadmium	48.6	50.0	ug/L	50.00		97	80-120	4	20	
Chromium III	100	4	ug/L							
Copper	115	4.0	ug/L	100.0		115	80-120	4	20	
Iron	492	20.0	ug/L	500.0		98	80-120	4	20	
Nickel	104	4.0	ug/L	100.0		104	80-120	2	20	
Zinc	97.5	10.0	ug/L	100.0		97	80-120	3	20	
Batch CD72861 - [CALC]										
Blank										
Chromium III	ND	10	ug/L							
LCS										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CD72861 - [CALC]

Chromium III	ND		ug/L							
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LCS Dup

Chromium III	ND		ug/L							
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8260B Volatile Organic Compounds

Batch CE70228 - 5030B

Blank

1,2-Dichloroethane	ND	1.0	ug/L							
Trichloroethene	ND	1.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	24.5		ug/L	25.00		98	70-130			
Surrogate: 4-Bromofluorobenzene	23.8		ug/L	25.00		95	70-130			
Surrogate: Dibromofluoromethane	24.0		ug/L	25.00		96	70-130			
Surrogate: Toluene-d8	26.4		ug/L	25.00		105	70-130			

LCS

1,2-Dichloroethane	10.6		ug/L	10.00		106	70-130			
Trichloroethene	10.1		ug/L	10.00		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	24.5		ug/L	25.00		98	70-130			
Surrogate: 4-Bromofluorobenzene	26.5		ug/L	25.00		106	70-130			
Surrogate: Dibromofluoromethane	24.0		ug/L	25.00		96	70-130			
Surrogate: Toluene-d8	25.7		ug/L	25.00		103	70-130			

LCS Dup

1,2-Dichloroethane	10.2		ug/L	10.00		102	70-130	4	25	
Trichloroethene	10.1		ug/L	10.00		101	70-130	0.2	25	
Surrogate: 1,2-Dichloroethane-d4	24.4		ug/L	25.00		98	70-130			
Surrogate: 4-Bromofluorobenzene	24.9		ug/L	25.00		99	70-130			
Surrogate: Dibromofluoromethane	22.6		ug/L	25.00		91	70-130			
Surrogate: Toluene-d8	25.4		ug/L	25.00		102	70-130			

8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution

Batch CE70133 - 3535A

Blank

1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	3.49		ug/L	5.000		70	15-115			

LCS

1,4-Dioxane	10.2	0.250	ug/L	10.00		102	40-140			
Surrogate: 1,4-Dioxane-d8	3.87		ug/L	5.000		77	15-115			

LCS Dup

1,4-Dioxane	10.2	0.250	ug/L	10.00		102	40-140	0.4	20	
Surrogate: 1,4-Dioxane-d8	3.54		ug/L	5.000		71	15-115			

8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CE70125 - 3510C

Blank



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270D(SIM) Polynuclear Aromatic Hydrocarbon

Batch CE70125 - 3510C

Fluorene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.935		ug/L	2.500		37	30-130			
Surrogate: 2-Fluorobiphenyl	1.26		ug/L	2.500		50	30-130			
Surrogate: Nitrobenzene-d5	1.55		ug/L	2.500		62	30-130			
Surrogate: p-Terphenyl-d14	1.83		ug/L	2.500		73	30-130			

LCS

Fluorene	2.88	0.20	ug/L	4.000		72	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	1.14		ug/L	2.500		46	30-130			
Surrogate: 2-Fluorobiphenyl	1.58		ug/L	2.500		63	30-130			
Surrogate: Nitrobenzene-d5	1.78		ug/L	2.500		71	30-130			
Surrogate: p-Terphenyl-d14	1.78		ug/L	2.500		71	30-130			

LCS Dup

Fluorene	3.38	0.20	ug/L	4.000		84	40-140	16	20	
Surrogate: 1,2-Dichlorobenzene-d4	1.36		ug/L	2.500		54	30-130			
Surrogate: 2-Fluorobiphenyl	1.82		ug/L	2.500		73	30-130			
Surrogate: Nitrobenzene-d5	2.06		ug/L	2.500		82	30-130			
Surrogate: p-Terphenyl-d14	1.74		ug/L	2.500		70	30-130			

Classical Chemistry

Batch CE70137 - General Preparation

Blank										
Chloride	ND	0.5	mg/L							

LCS

Chloride	2.6		mg/L	2.500		105	90-110			
----------	-----	--	------	-------	--	-----	--------	--	--	--

Batch CE70138 - General Preparation

Blank										
Total Suspended Solids	ND	5	mg/L							

LCS

Total Suspended Solids	44		mg/L	43.50		101	80-120			
------------------------	----	--	------	-------	--	-----	--------	--	--	--

Batch CE70139 - TCN Prep

Blank										
Total Cyanide (LL)	ND	5.00	ug/L							

LCS

Total Cyanide (LL)	20.2	5.00	ug/L	20.06		101	90-110			
--------------------	------	------	------	-------	--	-----	--------	--	--	--

LCS

Total Cyanide (LL)	150	5.00	ug/L	150.4		99	90-110			
--------------------	-----	------	------	-------	--	----	--------	--	--	--

LCS Dup

Total Cyanide (LL)	148	5.00	ug/L	150.4		99	90-110	0.7	20	
--------------------	-----	------	------	-------	--	----	--------	-----	----	--



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

Notes and Definitions

- U Analyte included in the analysis, but not detected
- D Diluted.
- B- Blank Spike recovery is below lower control limit (B-).
- 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



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: Wynn Everett - RGP

ESS Laboratory Work Order: 1704793

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/meecd/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 - Norwood, MA - GZA/MM

ESS Project ID: 1704793

Date Received: 4/28/2017

Shipped/Delivered Via: ESS Courier

Project Due Date: 5/2/2017

Days for Project: 2 Day

- | | |
|--|--|
| <p>1. Air bill manifest present? <input type="checkbox"/> No
Air No.: <u>NA</u></p> <p>2. Were custody seals present? <input type="checkbox"/> No</p> <p>3. Is radiation count <100 CPM? <input type="checkbox"/> Yes</p> <p>4. Is a Cooler Present? <input type="checkbox"/> Yes
Temp: <u>4.9</u> Iced with: <u>Ice</u></p> <p>5. Was COC signed and dated by client? <input type="checkbox"/> Yes</p> | <p>6. Does COC match bottles? <input type="checkbox"/> Yes</p> <p>7. Is COC complete and correct? <input type="checkbox"/> Yes</p> <p>8. Were samples received intact? <input type="checkbox"/> Yes</p> <p>9. Were labs informed about <u>short holds & rushes</u>? <input checked="" type="checkbox"/> Yes / No / NA</p> <p>10. Were any analyses received outside of hold time? Yes <input checked="" type="checkbox"/> No</p> |
|--|--|

- | | |
|---|--|
| <p>11. Any Subcontracting needed? <input checked="" type="checkbox"/> Yes / No
ESS Sample IDs: <u>Samples 1-2</u>
Analysis: <u>1.4 Dioxane SD</u>
TAT: <u>2 Day</u></p> <p>13. Are the samples properly preserved? <input checked="" type="checkbox"/> Yes / No
a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____</p> | <p>12. Were VOAs received? <input checked="" type="checkbox"/> Yes / No
a. Air bubbles in aqueous VOAs? <input checked="" type="checkbox"/> Yes / No
b. Does methanol cover soil completely? Yes / No / NA</p> |
|---|--|

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No 4/28/17
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)
01	125802	Yes	No	Yes	VOA Vial - HCl	HCl	
01	125803	Yes	No	Yes	VOA Vial - HCl	HCl	
01	125804	Yes	No	Yes	VOA Vial - HCl	HCl	
01	125809	Yes	NA	Yes	1L Amber - Unpres	NP	
01	125810	Yes	NA	Yes	1L Amber - Unpres	NP	
01	125811	Yes	NA	Yes	1L Amber - Unpres	NP	
01	125812	Yes	NA	Yes	1L Amber - Unpres	NP	
01	125814	Yes	NA	Yes	1L Poly - Unpres	NP	
01	125816	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	125818	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	125820	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	<u>pH=11 4/28/17 2108 CA</u>
02	125799	Yes	No	Yes	VOA Vial - HCl	HCl	
02	125800	Yes	No	Yes	VOA Vial - HCl	HCl	
02	125801	Yes	No	Yes	VOA Vial - HCl	HCl	
02	125805	Yes	NA	Yes	1L Amber - Unpres	NP	
02	125806	Yes	NA	Yes	1L Amber - Unpres	NP	
02	125807	Yes	NA	Yes	1L Amber - Unpres	NP	
02	125808	Yes	NA	Yes	1L Amber - Unpres	NP	
02	125813	Yes	NA	Yes	1L Poly - Unpres	NP	
02	125815	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	125817	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	125819	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	<u>pH 7.2 4/28/17 2108 CA</u>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/MM

ESS Project ID: 1704793

Date Received: 4/28/2017

2nd Review

Are barcode labels on correct containers?

Yes / No

Completed

By:

Date & Time:

4/28/17 2057

Reviewed

By:

Date & Time:

4/28/17 2109

Delivered

By:

Date & Time:

4/28/17 2109

[Handwritten signatures and initials]



ANALYTICAL REPORT

Lab Number:	L1716287
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Matthew Smith
Phone:	(781) 278-5830
Project Name:	WYNN EVERETT
Project Number:	171521.52
Report Date:	05/19/17

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), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1716287-01	RECEIVING WATER- MYSTIC RIVER	WATER	1 HORIZON WAY, EVERETT, MA	05/18/17 06:30	05/18/17

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

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. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated 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.

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 table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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 Client Service Representative 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 Client Services at 800-624-9220 with any questions.

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

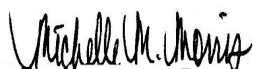
Case Narrative (continued)

Metals

The WG1005059-3 MS recovery for zinc (141%), performed on L1716287-01, recovered outside the 70-130% acceptance criteria. The result for this analyte is considered suspect due to either the heterogeneous nature of the sample or matrix interference.

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:



Michelle M. Morris

Title: Technical Director/Representative

Date: 05/19/17

METALS

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1716287-01
 Client ID: RECEIVING WATER- MYSTIC RIVER
 Sample Location: 1 HORIZON WAY, EVERETT, MA
 Matrix: Water

Date Collected: 05/18/17 06:30
 Date Received: 05/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00189		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Copper, Total	0.00466		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Iron, Total	0.362		mg/l	0.050	--	1	05/19/17 06:20	05/19/17 12:41	EPA 3005A	19,200.7	PS
Lead, Total	0.00733		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	05/19/17 09:45	05/19/17 14:45	EPA 245.1	3,245.1	BV
Nickel, Total	ND		mg/l	0.00200	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	05/19/17 06:20	05/19/17 09:59	EPA 3005A	3,200.8	AM
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		05/19/17 09:59	NA	107,-	



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1005059-1									
Antimony, Total	ND	mg/l	0.00400	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Arsenic, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Cadmium, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Chromium, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Copper, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Lead, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Nickel, Total	ND	mg/l	0.00200	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Selenium, Total	ND	mg/l	0.00500	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Silver, Total	ND	mg/l	0.00100	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM
Zinc, Total	ND	mg/l	0.01000	--	1	05/19/17 06:20	05/19/17 09:47	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1005061-1									
Iron, Total	ND	mg/l	0.050	--	1	05/19/17 06:20	05/19/17 12:24	19,200.7	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1005138-1									
Mercury, Total	ND	mg/l	0.00020	--	1	05/19/17 09:45	05/19/17 14:41	3,245.1	BV

Prep Information

Digestion Method: EPA 245.1



Lab Control Sample Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1716287

Report Date: 05/19/17

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1005059-2								
Antimony, Total	103		-		85-115	-		
Arsenic, Total	108		-		85-115	-		
Cadmium, Total	113		-		85-115	-		
Chromium, Total	104		-		85-115	-		
Copper, Total	102		-		85-115	-		
Lead, Total	106		-		85-115	-		
Nickel, Total	104		-		85-115	-		
Selenium, Total	108		-		85-115	-		
Silver, Total	102		-		85-115	-		
Zinc, Total	108		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1005061-2								
Iron, Total	108		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1005138-2								
Mercury, Total	110		-		85-115	-		

Matrix Spike Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005059-3 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER												
Antimony, Total	ND	0.5	0.5157	103	-	-	-	-	70-130	-	-	20
Arsenic, Total	0.00189	0.12	0.1278	105	-	-	-	-	70-130	-	-	20
Cadmium, Total	ND	0.051	0.04849	95	-	-	-	-	70-130	-	-	20
Chromium, Total	ND	0.2	0.1905	95	-	-	-	-	70-130	-	-	20
Copper, Total	0.00466	0.25	0.2425	95	-	-	-	-	70-130	-	-	20
Lead, Total	0.00733	0.51	0.5556	108	-	-	-	-	70-130	-	-	20
Nickel, Total	ND	0.5	0.4474	89	-	-	-	-	70-130	-	-	20
Selenium, Total	ND	0.12	0.1124	94	-	-	-	-	70-130	-	-	20
Silver, Total	ND	0.05	0.04600	92	-	-	-	-	70-130	-	-	20
Zinc, Total	ND	0.5	0.7069	141	Q	-	-	-	70-130	-	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005059-5 QC Sample: L1716399-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.5448	109	-	-	-	-	70-130	-	-	20
Arsenic, Total	ND	0.12	0.1218	102	-	-	-	-	70-130	-	-	20
Cadmium, Total	ND	0.051	0.05523	108	-	-	-	-	70-130	-	-	20
Chromium, Total	0.0010	0.2	0.1963	98	-	-	-	-	70-130	-	-	20
Copper, Total	0.4659	0.25	0.6745	83	-	-	-	-	70-130	-	-	20
Lead, Total	0.0012	0.51	0.5310	104	-	-	-	-	70-130	-	-	20
Nickel, Total	0.0168	0.5	0.5020	97	-	-	-	-	70-130	-	-	20
Selenium, Total	ND	0.12	0.1256	105	-	-	-	-	70-130	-	-	20
Silver, Total	ND	0.05	0.04959	99	-	-	-	-	70-130	-	-	20
Zinc, Total	0.8939	0.5	1.394	100	-	-	-	-	70-130	-	-	20

Matrix Spike Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005061-3 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER									
Iron, Total	0.362	1	1.15	79	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005138-3 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER									
Mercury, Total	ND	0.005	0.00443	89	-	-	70-130	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1716287

Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005059-4 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.00189	0.00176	mg/l	7		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00466	0.00470	mg/l	1		20
Lead, Total	0.00733	0.00751	mg/l	2		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005059-6 QC Sample: L1716399-01 Client ID: DUP Sample						
Lead, Total	0.0012	0.00121	mg/l	3		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005061-4 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER						
Iron, Total	0.362	0.394	mg/l	8		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1005138-4 QC Sample: L1716287-01 Client ID: RECEIVING WATER- MYSTIC RIVER						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: WYNN EVERETT

Lab Number: L1716287

Project Number: 171521.52

Report Date: 05/19/17

SAMPLE RESULTS

Lab ID: L1716287-01
 Client ID: RECEIVING WATER- MYSTIC RIVER
 Sample Location: 1 HORIZON WAY, EVERETT, MA
 Matrix: Water

Date Collected: 05/18/17 06:30
 Date Received: 05/18/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
SALINITY	7.7		SU	2.0	--	1	-	05/18/17 22:15	121,2520B	AS
pH (H)	7.7		SU	-	NA	1	-	05/18/17 23:14	1,9040C	AS
Nitrogen, Ammonia	0.135		mg/l	0.075	--	1	05/18/17 21:00	05/18/17 23:22	121,4500NH3-BH	AT
Chromium, Hexavalent	ND		mg/l	0.010	--	1	05/19/17 02:10	05/19/17 02:29	1,7196A	KA



Project Name: WYNN EVERETT

Lab Number: L1716287

Project Number: 171521.52

Report Date: 05/19/17

Method Blank Analysis
Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1004953-1									
Nitrogen, Ammonia	ND	mg/l	0.075	--	1	05/18/17 21:00	05/18/17 23:19	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1005021-1									
Chromium, Hexavalent	ND	mg/l	0.010	--	1	05/19/17 02:10	05/19/17 02:27	1,7196A	KA

Lab Control Sample Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1716287

Report Date: 05/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004953-2								
Nitrogen, Ammonia	100		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004970-1								
SALINITY	92		-			-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1004983-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1005021-2								
Chromium, Hexavalent	98		-		85-115	-		20

Matrix Spike Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004953-4 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER												
Nitrogen, Ammonia	0.135	4	4.02	97	-	-	-	-	80-120	-	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1005021-4 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER												
Chromium, Hexavalent	ND	0.1	0.101	101	-	-	-	-	85-115	-	-	20

Lab Duplicate Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004953-3 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER						
Nitrogen, Ammonia	0.135	0.131	mg/l	3		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004970-2 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER						
SALINITY	7.7	7.8	SU	1		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1004983-2 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER						
pH (H)	7.7	7.6	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1005021-3 QC Sample: L1716287-01 Client ID: RECEIVING WATER-MYSTIC RIVER						
Chromium, Hexavalent	ND	ND	mg/l	NC		20



Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1716287

Report Date: 05/19/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1716287-01A	Plastic 250ml HNO3 preserved	A	<2	2.5	Y	Absent	CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),AG-2008T(180),AS-2008T(180),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1716287-01B	Plastic 250ml unpreserved	A	7	2.5	Y	Absent	HEXCR-7196(1),PH-9040(1)
L1716287-01C	Amber 120ml unpreserved	A	7	2.5	Y	Absent	SALINITY(28)
L1716287-01D	Plastic 500ml H2SO4 preserved	A	<2	2.5	Y	Absent	NH3-4500(28)

*Values in parentheses indicate holding time in days

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

GLOSSARY

Acronyms

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).
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.
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.
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.
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

- 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

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.

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.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- 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

Report Format: Data Usability Report



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

Data Qualifiers

- 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.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - 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 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.
 - J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1716287
Report Date: 05/19/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

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: m/p-xylene, o-xylene

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: 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**

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, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, 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 624: Volatile Halocarbons & Aromatics,

EPA 608: 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: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water

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

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, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

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

EPA for NOI.



CHAIN OF CUSTODY

PAGE 1 OF 2

Project Information

Project Name: ~~Wynn Boston Harbor~~
WYNN EVERETT

Project Location: 1 Horizon Way, Everett MA

Project #: ~~01-Q171521.52~~

Project Manager: Neal Carey

ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED),
ASAP

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Westborough, MA Mansfield, MA
TEL: 508-898-9220 TEL: 508-822-9300
FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: GZA

Address: 249 Vanderbilt Ave

Norwood, MA

Phone: (781) 278-3700

Fax: (781) 278-5752

Email: Neal.Carey@gza.com

These samples have been Previously analyzed by Alpha

Date Rec'd in Lab: *5/18/17* ALPHA Job #: *L1716287*

Report Information	Data Deliverables	Billing Information
<input type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL	<input type="checkbox"/> Same as Client info
<input type="checkbox"/> ADEx	<input type="checkbox"/> Add'l Deliverables	PO #:

Regulatory Requirements/Report Limits

State/Fed Program: *RGP* Criteria:

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

Yes No Are MCP Analytical Methods Required?
 Yes No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS													SAMPLE HANDLING	TOTAL # BOTTLES
PH, Temp, Salinity, Ammonia, Sulfate	Total Recoverable Antimony	Total Recoverable Arsenic	Total Recoverable Cadmium	Total Recoverable Chromium III & VI	Total Recoverable Copper	Total Recoverable Iron	Total Recoverable Lead	Total Recoverable Mercury	Total Recoverable Nickel	Total Recoverable Selenium	Total Recoverable Silver	Sample Specific Comments		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
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ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<i>6287 -01</i>	<i>Receiving Water - Mystic River</i>	<i>5/18/17</i>	<i>0630</i>	<i>SW</i>	<i>MDD</i>

SAMPLE HANDLING
Filtration
 Done
 Not Needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

FORM NO: 01-01(1)
(rev. 5-JAN-12)

Container Type	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-
Relinquished By:	Date/Time	Received By:	Date/Time									
<i>Matthew Dion</i>	<i>5/18/17 @ 1340</i>	<i>AAAC</i>	<i>5/18/17 1340</i>									
<i>AAAC</i>	<i>5/18/17 1228</i>	<i>[Signature]</i>	<i>5/18/17, 1730</i>									

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



ANALYTICAL REPORT

Lab Number:	L1718229
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Matthew Smith
Phone:	(781) 278-5830
Project Name:	WYNN EVERETT
Project Number:	171521.52
Report Date:	06/07/17

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), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1718229-01	INFLUENT_ (6.2.17)	WATER	1 HORIZON WAY, EVERETT, MA	06/02/17 05:30	06/02/17
L1718229-02	EFFLUENT_ (6.2.17)	WATER	1 HORIZON WAY, EVERETT, MA	06/02/17 06:00	06/02/17

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

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. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated 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.

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 table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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 Client Service Representative 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 Client Services at 800-624-9220 with any questions.

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Case Narrative (continued)

Report Submission

This report replaces the report issued June 6, 2017. At the client's request, all non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L1718229-01: The sample was received without the container for the Ammonia analysis. An aliquot was taken from an unpreserved container and preserved appropriately.

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:

 Cristin Walker

Title: Technical Director/Representative

Date: 06/07/17

ORGANICS

SEMIVOLATILES

Project Name: WYNN EVERETT**Lab Number:** L1718229**Project Number:** 171521.52**Report Date:** 06/07/17**SAMPLE RESULTS**

Lab ID: L1718229-01
 Client ID: INFLUENT_ (6.2.17)
 Sample Location: 1 HORIZON WAY, EVERETT, MA

Date Collected: 06/02/17 05:30
 Date Received: 06/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 06/03/17 01:45

Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 06/04/17 20:14
 Analyst: RC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	40		21-120
Phenol-d6	27		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	62		15-120
2,4,6-Tribromophenol	66		10-120
4-Terphenyl-d14	66		41-149

Project Name: WYNN EVERETT**Lab Number:** L1718229**Project Number:** 171521.52**Report Date:** 06/07/17**SAMPLE RESULTS**

Lab ID: L1718229-02
 Client ID: EFFLUENT_ (6.2.17)
 Sample Location: 1 HORIZON WAY, EVERETT, MA

Date Collected: 06/02/17 06:00
 Date Received: 06/02/17
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 06/03/17 01:45

Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 06/04/17 20:39
 Analyst: RC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	28		10-120
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	67		10-120
4-Terphenyl-d14	66		41-149

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
 Analytical Date: 06/02/17 21:26
 Analyst: CB

Extraction Method: EPA 3510C
 Extraction Date: 06/02/17 03:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1009101-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.91

Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		21-120
Phenol-d6	25		10-120
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	60		15-120
2,4,6-Tribromophenol	62		10-120
4-Terphenyl-d14	68		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Lab Number: L1718229

Project Number: 171521.52

Report Date: 06/07/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1009101-2 WG1009101-3								
Bis(2-ethylhexyl)phthalate	83		76		40-140	9		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		42		21-120
Phenol-d6	31		30		10-120
Nitrobenzene-d5	67		65		23-120
2-Fluorobiphenyl	63		58		15-120
2,4,6-Tribromophenol	73		66		10-120
4-Terphenyl-d14	70		64		41-149

METALS

Project Name: WYNN EVERETT

Lab Number: L1718229

Project Number: 171521.52

Report Date: 06/07/17

SAMPLE RESULTS

Lab ID: L1718229-01

Date Collected: 06/02/17 05:30

Client ID: INFLUENT_ (6.2.17)

Date Received: 06/02/17

Sample Location: 1 HORIZON WAY, EVERETT, MA

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Silver, Total	ND		mg/l	0.00100	0.00026	1	06/03/17 10:00	06/05/17 13:04	EPA 3005A	3,200.8	TT



Project Name: WYNN EVERETT

Lab Number: L1718229

Project Number: 171521.52

Report Date: 06/07/17

SAMPLE RESULTS

Lab ID: L1718229-02

Date Collected: 06/02/17 06:00

Client ID: EFFLUENT_ (6.2.17)

Date Received: 06/02/17

Sample Location: 1 HORIZON WAY, EVERETT, MA

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Silver, Total	ND		mg/l	0.00100	0.00026	1	06/05/17 06:35	06/05/17 15:32	EPA 3005A	3,200.8	TT



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1009569-1									
Silver, Total	ND	mg/l	0.00100	0.00026	1	06/03/17 10:00	06/05/17 12:47	3,200.8	TT

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1009764-1									
Silver, Total	ND	mg/l	0.00100	0.00026	1	06/05/17 06:35	06/05/17 15:26	3,200.8	TT

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1009569-2								
Silver, Total	100		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1009764-2								
Silver, Total	103		-		85-115	-		

Matrix Spike Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1009569-3 QC Sample: L1718235-01 Client ID: MS Sample												
Silver, Total	ND	0.05	0.0495	99		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1009764-3 QC Sample: L1717777-01 Client ID: MS Sample												
Silver, Total	ND	0.05	0.04908	98		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1009764-5 QC Sample: L1718226-02 Client ID: MS Sample												
Silver, Total	ND	0.05	0.04718	94		-	-		70-130	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1718229

Report Date: 06/07/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1009764-4 QC Sample: L1717777-01 Client ID: DUP Sample						
Silver, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1009764-6 QC Sample: L1718226-02 Client ID: DUP Sample						
Silver, Total	ND	ND	mg/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: WYNN EVERETT

Lab Number: L1718229

Project Number: 171521.52

Report Date: 06/07/17

SAMPLE RESULTS

Lab ID: L1718229-01
 Client ID: INFLUENT_ (6.2.17)
 Sample Location: 1 HORIZON WAY, EVERETT, MA
 Matrix: Water

Date Collected: 06/02/17 05:30
 Date Received: 06/02/17
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Nitrogen, Ammonia	9.88		mg/l	0.375	0.112	5	06/05/17 07:38	06/05/17 20:22	121,4500NH3-BH	AT



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Method Blank Analysis
Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1009783-1									
Nitrogen, Ammonia	ND	mg/l	0.075	0.022	1	06/05/17 07:38	06/05/17 20:14	121,4500NH3-BH	AT

Lab Control Sample Analysis Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1009783-2								
Nitrogen, Ammonia	96		-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1009783-4 QC Sample: L1717669-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.045J	4	0.119	3	Q	-	-		80-120	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: WYNN EVERETT

Project Number: 171521.52

Lab Number: L1718229

Report Date: 06/07/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1009783-3 QC Sample: L1717669-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.045J	0.034J	mg/l	NC		20

Project Name: WYNN EVERETT**Lab Number:** L1718229**Project Number:** 171521.52**Report Date:** 06/07/17**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	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1718229-01A	Plastic 500ml H2SO4 preserved split	A	7	<2	5.4	Y	Absent		NH3-4500(28)
L1718229-01B	Amber 1000ml unpreserved	A	7	7	5.4	Y	Absent		8270TCL(7)
L1718229-01C	Amber 1000ml unpreserved	A	7	7	5.4	Y	Absent		8270TCL(7)
L1718229-02A	Plastic 500ml H2SO4 preserved split	A	7	<2	5.4	Y	Absent		HOLD-WETCHEM(0)
L1718229-02B	Amber 1000ml unpreserved	A	7	7	5.4	Y	Absent		8270TCL(7)
L1718229-02C	Amber 1000ml unpreserved	A	7	7	5.4	Y	Absent		8270TCL(7)
L1718229-02X	Plastic 500ml HNO3 preserved	A	<2	<2	5.4	Y	Absent		AG-2008T(180)

Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

GLOSSARY

Acronyms

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).
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.
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.
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.
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

- 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.

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.

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 Condensation Product".
- 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

Report Format: DU Report with 'J' Qualifiers



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

Data Qualifiers

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.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- 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 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.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: WYNN EVERETT
Project Number: 171521.52

Lab Number: L1718229
Report Date: 06/07/17

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

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: m/p-xylene, o-xylene

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

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

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

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

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

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.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water

EPA 300.0: 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**

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, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, 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 624: Volatile Halocarbons & Aromatics,

EPA 608: 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: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water

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

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, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

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

NH 6/5/17



CHAIN OF CUSTODY

PAGE 1 OF 1

Project Information

Project Name: ~~Wynn Boston Harbor~~
WYNN EVERETT

Project Location: 1 Horizon Way, Everett MA

Project #: ~~01-0171521.52~~

Project Manager: Neal Carey

ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: 2-Day RUSH Time:

Westborough, MA Mansfield, MA
TEL: 508-898-9220 TEL: 508-822-9300
FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: (781) 278-3700
Fax: (781) 278-5752
Email: Neal.Carey@gza.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

1. RGP Metals include As, Cd, Cu, Pb, Ni, Zn, and Fe by 6020.
2. Hex Cr. has short hold-time.
3. Use RGP approved methods for all analysis
4. Please analyze for but do not report Hex Cr.

Date Rec'd in Lab: 06/02/17

ALPHA Job #: L1718229

Report Information Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria
RGP Limit; Appendix VI RGP

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

Yes No Are MCP Analytical Methods Required?
 Yes No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

Sample ID	Matrix	Silver	Ammonia	diethylhexylphthalate															
18229-01	WW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	WW	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
Filtration
 Done
 Not Needed
 Lab to do
Preservation
 Lab to do
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
18229-01	Influent_(6.2.17)	6.2.2017	0530	WW	MDD
02	Effluent_(6.2.17)	6.2.17	0600	WW	MDD

PLEASE ANSWER QUESTIONS ABOVE!

Container Type	P	P	P	P	-	P	V	V	A	A	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-

IS YOUR PROJECT MA MCP or CT RCP?

FORM NO: 01-01(1)
(rev. 5-JAN-12)

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Matthew Dan T. Hill</i>	6-2-17 @ 3:00 6/2/17 1730	<i>[Signature]</i>	6/2/17 1300 6/2/17 1730

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CHAIN OF CUSTODY

PAGE 1 OF 1

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: GZA
 Address: 249 Vanderbilt Ave
 Norwood, MA
 Phone: (781) 278-3700
 Fax: (781) 278-5752
 Email: Neal.Carey@gza.com
 These samples have been Previously analyzed by Alpha

Project Information

Project Name: Wynn Boston Harbor
 Project Location: 1 Horizon Way, Everett MA
 Project #: 01.0171521.52
 Project Manager: Neal Carey
 ALPHA Quote #:

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)
 Due Date: 2-Day RUSH Time:

Other Project Specific Requirements/Comments/Detection Limits:

1. RGP Metals include As, Cd, Cu, Pb, Ni, Zn, and Fe by 6020.
2. Hex Cr. has short hold-time.
3. Use RGP approved methods for all analysis
4. Please analyze for but do not report Hex Cr.

Date Rec'd in Lab: 02/02/17

ALPHA Job #: L1718229

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria
 RGP Limit: Appendix VI RGP

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

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Silver	Ammonia	diethylhexylphthalate																	
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(rev. 6-JAN-12)

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Matthew Dan Tithudell</i>	6-2-17 @ 3:00 6/2/17 1130	<i>[Signature]</i>	6/2/17 1300 6/2/17 (72)

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