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

May 24, 2019
GZA File No: 01.00171521.52

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

Re: Release Abatement Measure Plan Modification No. 4
Construction-Related Remediation Activities
(Former) Everett Staging Yard
One Broadway
Everett, Massachusetts
Release Tracking Number (RTN) 3-13341

To Whom It May Concern:

GZA GeoEnvironmental, Inc. ("GZA"), on behalf of Wynn MA, LLC ("Wynn MA"), has prepared this Release Abatement Measure Plan Modification ("RAM Plan Modification") to describe Response Actions pursuant to the Massachusetts Contingency Plan ("MCP") that will be completed during the construction of the Encore Boston Harbor resort at the former Everett Staging Yard Disposal Site (the "Site"). This RAM Plan Modification was prepared to address modifications to the permanent water treatment and re-injection system which manages groundwater that infiltrates into the basement level of the garage portion of the building. The use of remedial additives to sequester low levels of total metals (iron, manganese, etc.) and neutralize the pH of infiltrated groundwater water will be implemented during water treatment prior to on-site, upgradient discharge/re-injection as described in this RAM Plan Modification. Furthermore, two additional re-injection wells may be installed to provide additional injection capacity. The need for additional injection capacity will be based on observed increased infiltration rates over time and to account for potential increased flow rates in the future. The modifications included herein have previously been reviewed with the Massachusetts Department of Environmental Protection ("MassDEP") Bureau of Waste Site Clean-up ("BWSC").

EXECUTIVE SUMMARY

Construction activities at the Site are being conducted following the provisions in the RAM Plan previously submitted to MassDEP on May 3, 2016 (the "May 3 RAM Plan"), the first RAM Plan Modification submitted to MassDEP on November 16, 2016 ("Modification No. 1"), the second RAM Plan Modification submitted on February 17, 2017 ("Modification No. 2"), and the third RAM Plan Modification submitted on November 1, 2017 ("Modification No. 3"). The May 3rd RAM Plan details the Site history, Site releases, Site conditions and surrounding receptors, and RAM implementation. The provisions of the May 3rd RAM Plan have been and will continue to stay in effect during subsequent construction activities at the Site with the exception of asbestos in soil management work, which has been and will be performed in accordance with Modifications Nos. 1 and 2. Engineering controls including clean soil cover materials, marker layers, shovel resistant materials, and hardscape materials installed as part

of final grading activities at the Site are described in Modification No. 3. The use of remedial additives to mitigate water quality concerns prior to re-injection is described as part of this RAM Plan Modification.

BACKGROUND

The Site is identified by the MassDEP as Release Tracking Number ("RTN") 3-13341. The RAM Project Area and Disposal Site Boundaries are shown on **Figure 1.** Portions of this area that will be subject to the provisions of this revised RAM Plan Modification are shown on **Figure 2**.

This RAM Plan Modification has been prepared in accordance with 310 CMR 40.0444 of the MCP, and with the Limitations in **Appendix A**. This RAM Plan Modification will be submitted electronically through the MassDEP eDEP online filing system. A copy of the RAM transmittal form ("BWSC-106") is included in **Appendix B**.

Construction activities at the Site have been conducted following provisions in the May 3 RAM Plan as well as Modifications Nos. 1, 2, and 3. The May 3 RAM Plan details the Site history, description of releases, Site conditions and surrounding receptors, and RAM implementation. The provisions of the May 3 RAM Plan and Modifications Nos. 1, 2, and 3 will stay in effect during subsequent construction activities at the Site, but modifications to the existing permanent water treatment and re-injection system will be implemented as described in this RAM Plan Modification.

A Permanent Seepage Treatment System ("PSTS") has been installed to treat and discharge groundwater that infiltrates into the sub-floor mat slab collection system in the bottom level of the garage at the resort building. The sub-floor mat slab system consists of nine collection points, piping, and sump pits that collect groundwater that infiltrates through the mat slab and slurry walls. This collection system has been sealed so that fluids impacted by automobiles, equipment, or other materials that collect on top of the floor do not mix with infiltrated groundwater. The infiltrated groundwater is then pumped to an on-Site treatment system for filtration and settling. Currently, the PSTS uses a sequestering agent ("Redux 300©") to maintain low concentrations of metals in solution to mitigate fouling of the injection wells. The four injection wells were installed in accordance with the design documents included in the Underground Injection Control ("UIC") registration (MassDEP transaction # 1012578) approved by MassDEP on November 26, 2018. The wells have been in periodic use for receiving treated infiltration water from February through mid-March, 2019. Please refer to the attached **Figure 2** for the locations of the existing four injection wells.

In mid-March 2019, the system-wide injection rate within the wells had decreased significantly, from approximately 12 gallons per minute ("gpm") to 1 gpm. Subsequent sampling and testing of infiltrated water entering the sumps in the basement indicated iron concentrations ranging from 65 to 178 mg/L, and hardness concentrations over 2,000 mg/L, in sumps in the southwest and middle portions of the garage. Iron concentrations below 1 mg/L, hardness concentrations of below 200 mg/L, and pH measurements as high as 12 were observed in the sumps in the northeast, north, and northwestern portions of the garage. Laboratory results previously provided to MassDEP are included in **Appendix D.** Based on this information, it was determined that iron and/or hardness fouling had clogged the wells, thus reducing the allowable injection rate. A 48-hour drawdown test on the groundwater infiltration collection system indicated that the actual groundwater infiltration flowrate was approximately 5.8 gpm for that period. During the third week of April, Lockwood Remediation Technologies ("LRT") was contracted by Wynn MA to redevelop (clean and flush) the existing wells. GZA was informed that the resulting maximum allowable combined injection rate (post-cleaning, all four wells) is now estimated at between 10 and 11 gpm.

Based on this data, drawdown testing by pumping from only the north/east sumps with low iron, low hardness, and high pH was performed to evaluate water quality and the impact to water levels across the garage area. This testing, performed over 72 hours, indicated that pumping from the north/east sumps at a steady state flowrate of 5.8 gpm was effective in dropping the water level over the full garage area below the top of the topping slab. Water quality testing over that same

period indicated no significant change in iron concentrations or pH. Immediately following the 72-hour drawdown test, LRT performed an additional drawdown test for a period of more than one week which indicated the steady state infiltration rate had decreased to approximately 3 gpm over that time period.

At the request of MassDEP, GZA collected a combined water sample from the north/east sumps for analysis of site-specific contaminants of concern, including 1,4 dioxane, 1,2 dichloroethane, total cyanide, total arsenic, total cadmium, total chromium, total copper, total lead, total nickel, total iron, hardness, fluorine, pH and total suspended solids on May 17, 2019. With the exception of total cyanide (0.016 mg/L) and TSS (26 mg/L) constituents were reported below laboratory reporting limits. Laboratory measured pH was reported at 11.6. Refer to **Appendix D** for laboratory results.

The Site is a Public Involvement Plan ("PIP") site under the MCP. As the modifications listed below do not substantially alter or expand the May 3 RAM Plan, this submittal is not subject to an additional comment period per Section 40.1405(6)(e)(2) of the MCP.

PERSON ASSUMING RESPONSIBILITY FOR RAM PLAN MODIFICATION

The entity assuming responsibility for this RAM Plan Modification is Wynn MA. Contact information for the representative from Wynn MA is provided below:

Mr. Robert DeSalvio
President
Wynn MA, LLC
101 Station Landing, Suite 2200
Medford, Massachusetts 02155
Tel: 857-770-7801

RAM MODIFICATION IMPLEMENTATION

OBJECTIVES AND SCHEDULE

The objective of this RAM Plan Modification is to include the addition of remedial additives to the RAM activities at the Site. These additives will improve the quality of the groundwater being recharged upgradient of the garage. Furthermore, two additional injection wells may be installed to provide additional injection capacity in the event that increased flow rates are observed.

As discussed with Mr. Andrew Clark, MassDEP, the duration of the collection, treatment, and discharge of infiltrated groundwater under this RAM Plan Modification shall not exceed six months from the date of filing of this RAM Plan Modification. Based on recent discussions with MassDEP undertaken by GZA on behalf of Wynn MA, and during the May 9, 2019 site visit with Mr. Kevin Brander of MassDEP NERO, it is our current understanding that MassDEP will require that the re-injection of infiltrated groundwater from the basement level of the garage be regulated temporarily under the MCP but more permanently under a Groundwater Discharge Permit ("GDP"), as long as pH neutralization is included in the treatment process. Wynn MA has acknowledged that as soon as pH neutralization is added to the treatment process, the existing UIC registration will be voided. GZA anticipates that a GDP will be filed for MassDEP review by no later than May 31, 2019. The GDP shall be obtained within six months of the submission of this RAM Plan Modification.

INTRODUCTION OF REMEDIAL ADDITIVES

To neutralize elevated pH levels in infiltration water, a remedial additive consisting of a 93% solution of sulfuric acid will be introduced during water treatment. In addition, based on recent bench testing performed by the PSTS contractor, the sequestering agent will be switched to Redux 390©. Filter bags and 0.5-micron filter cartridges will be used to filter suspended solids prior to upgradient discharge. Sulfuric acid will be used to neutralize the pH of the infiltrated water to a range of approximately 7 to 8 and will be added to the treatment process prior to reinjection. Redux 390© will also be added during the treatment process as a means of keeping dissolved iron and hardness in solution, mitigating the potential for iron fouling in the wells. Material Safety Data Sheets ("MSDS") for the sulfuric acid and Redux 390© are provided in **Appendix C**. A process flow diagram ("PFD") for the proposed treatment system is included in **Appendix E**.

Please note that the PSTS contractor will also be supplying personal protection equipment and materials necessary for the safe operation of the PSTS. In addition, the implementation of the pH neutralization will require oversight by a licensed Wastewater Treatment Plant Operator ("WWTPO") Grade 2. Wynn MA has committed to this requirement.

Remedial activities described in this RAM Plan Modification meet the requirements for remedial wastewater discharge as outlined in 310 CMR 40.0045 and 40.0046. A summary of regulatory compliance is provided below.

- GZA will prepare an updated groundwater mounding and contaminant transport model for inclusion in the GDP application to demonstrate that discharge of remedial wastewater to upgradient injection wells will not result in groundwater mounding within two feet of the ground surface, or result in flooding of, or breakout to the ground surface.

- Remedial wastewater discharged to upgradient injection wells will be contained within the boundaries of the Disposal Site. Furthermore, the area of hydraulic containment of the groundwater at the Disposal Site will be monitored regularly following commencement of the discharge. To meet the requirements described in 310 CMR 40.0045 (4)(b), two observation wells will be installed up and side gradient to the injection well locations. The final location of the observation wells will be determined in the field to avoid conflicts with underground utilities. Monitoring is required once every thirty (30) days for up to one year and then on a quarterly basis each year thereafter.

- Concentrations of oil and/or hazardous material in the groundwater at the discharge location within the Disposal Site are not substantially lower than the concentrations of oil and/or hazardous material in the discharge.

- Permanent discharge of remedial wastewater will be regulated under the GDP, pending approval from MassDEP. GZA anticipates that a GDP will be filed for MassDEP review by no later than May 31, 2019. Until the GDP is approved, groundwater discharge will be regulated by this RAM Plan Modification.

SUPPLEMENTAL INJECTION WELL INSTALATION

Two additional injection wells may be installed, as needed, to provide additional capacity to the exiting injection system well network should an increase in flowrate be observed. The supplemental wells would provide an increase of approximately 6 gpm (or approximately 16 gpm total for the system) to the system and mitigate the potential for overloading system backups as well as providing flexibility for future well redevelopment work. The proposed locations

of these wells are provided in **Figure 2**. GZA will be preparing an updated groundwater mounding and contaminant transport model for inclusion in the GDP application.

LSP SEAL AND SIGNATURE (310 CMR 40.0444(1)(G))

The seal and signature of the Licensed Site Professional ("LSP") for this revised RAM Plan Modification (Lawrence Feldman, LSP #8107) are provided on the attached transmittal form in **Appendix B**.

If you should require any further information concerning the planned RAM activities, please do not hesitate to contact the undersigned at (781) 278-3700.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Daniel R. Scanlon
Assistant Project Manager

Matthew M. Smith
Consultant/Reviewer

Lawrence Feldman, LSP
Senior Principal

Attachments:

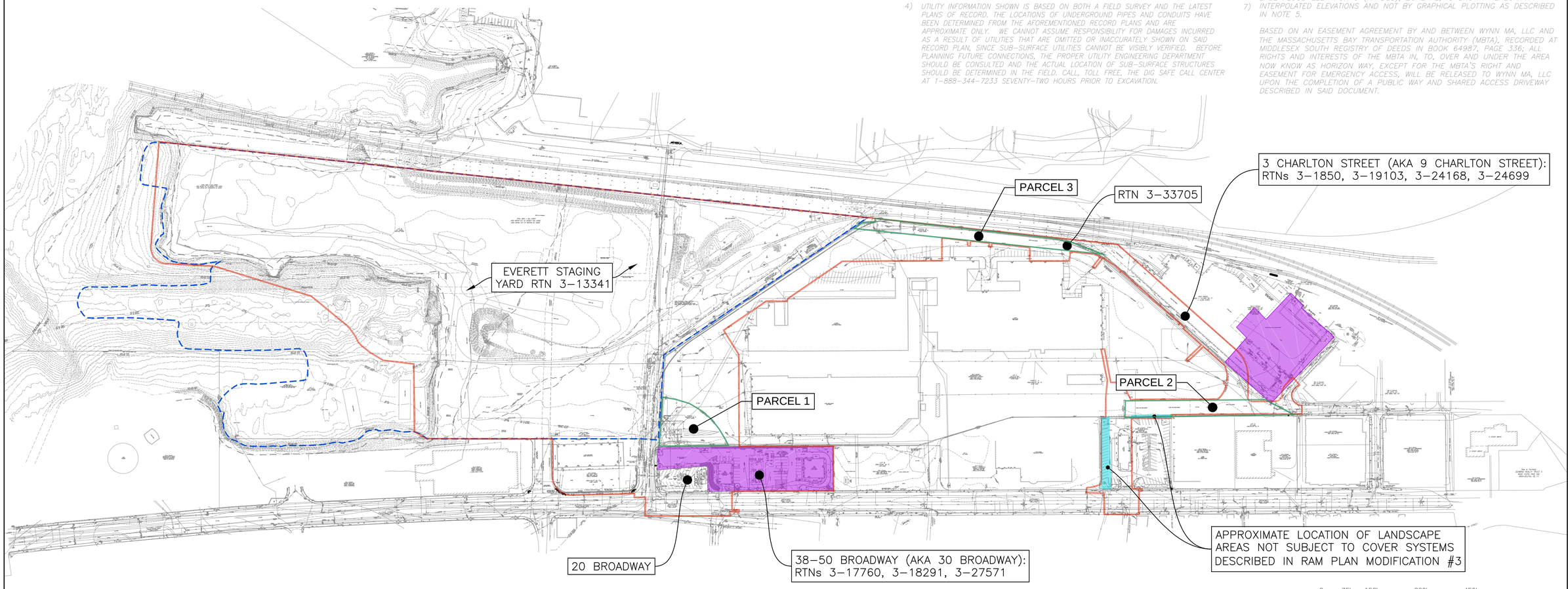
Figure 1	Disposal Site Boundary Figure
Figure 2	Proposed Additional Injection Well Figure
Appendix A	Limitations
Appendix B	Transmittal Forms BWSC106
Appendix C	Material Safety Data Sheets (MSDS)
Appendix D	Laboratory Analytical Results
Appendix E	Updated Process Flow Diagram

FIGURES

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
7) INTERPOLATED ELEVATIONS AND NOT BY GRAPHICAL PLOTTING AS DESCRIBED IN NOTE 5.

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 KNOW 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

Ⓢ	SEWER MANHOLE	FND	FOUND
Ⓓ	DRAIN MANHOLE	±	MORE OR LESS
Ⓔ	ELECTRIC MANHOLE	DH	DRILL HOLE
Ⓣ	TELEPHONE MANHOLE	VGC	VERTICAL GRANITE CURB
Ⓒ	CABLE TV MANHOLE	CLF	CHAIN LINK FENCE
	HYDRANT	BIT	BITUMINOUS
	WATER SHUT OFF	CONC	CONCRETE
	GAS SHUT OFF	NVP	NO VISIBLE PIPES
	CATCH BASIN		RAILROAD TRACKS
	GUY WIRE		GUARD RAIL
	UTILITY POLE	X	METAL FENCE
	LIGHT POLE	S	SEWER
	ELECTRIC HANDHOLE	D	DRAIN
	SIGN	W	WATER
FA	FIRE ALARM	G	GAS
	OBSERVATION WELL	OHW	OVERHEAD WIRES
GP	GATE POST		RETAINING WALL
	BOUND FOUND		
SB	STONE BOUND		
CB	CONCRETE BOUND		
	INDICATES COMMON OWNERSHIP		
	HANDICAP RAMP		

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.

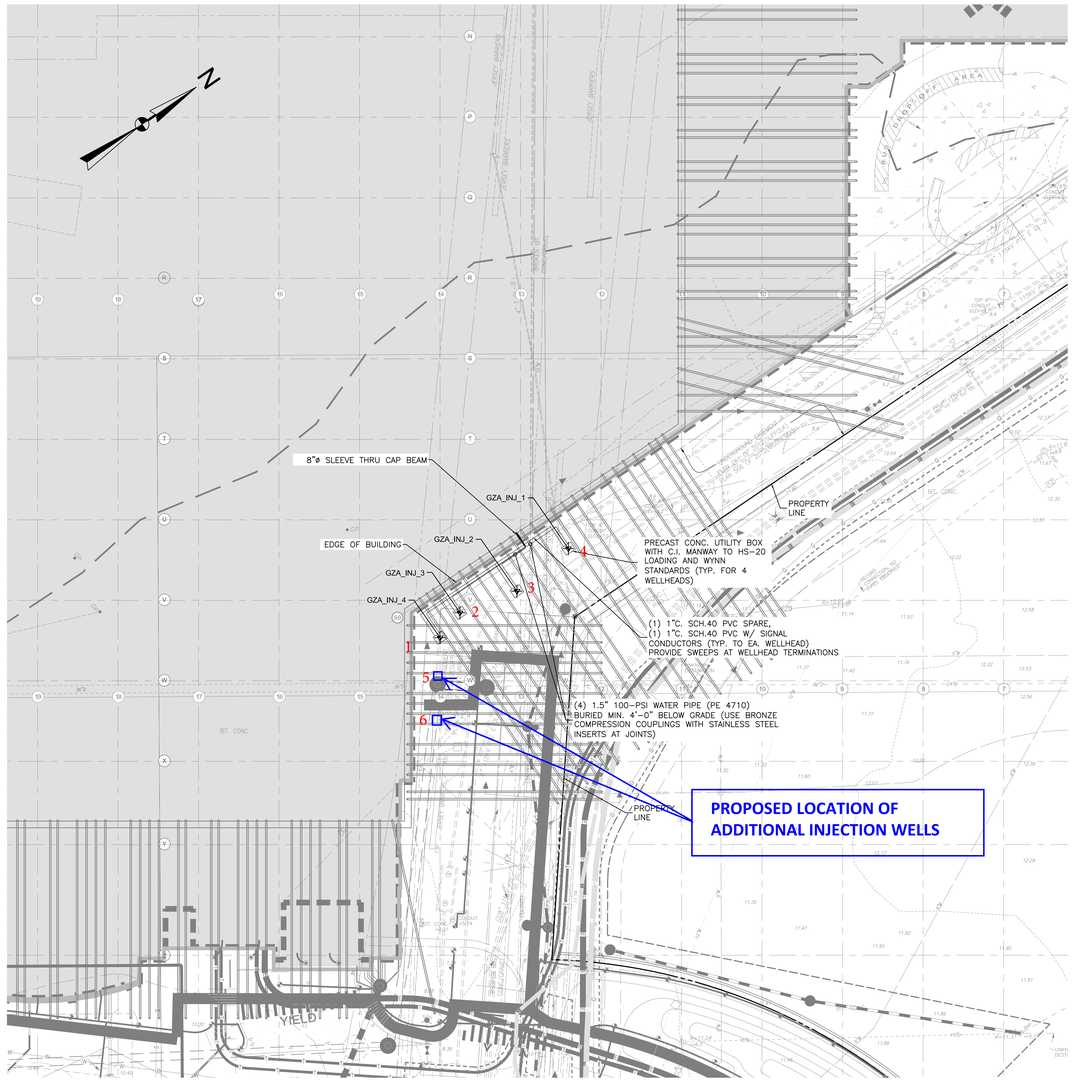
ENCORE BOSTON HARBOR
ONE BROADWAY EVERETT,
MASSACHUSETTS

RAM DARP

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WYNN MA, LLC

PROJ MGR:	DEL	REVIEWED BY:	MMS	CHECKED BY: LF	FIGURE 1
DESIGNED BY:	MMS	DRAWN BY:	JJZ	SCALE: AS SHOWN	
DATE: May 2019		PROJECT NO. 01.0171521.52		REVISION NO.	



NOTES:

1. GENERAL
   a. THERE ARE NO POTABLE WATER SUPPLY WELLS WITHIN 500 FEET OF THE PROPOSED UIC INJECTION WELLS.
   b. THERE ARE NO TITLE 5 LEACHING FIELDS OR SEPTIC TANKS WITHIN 500 FEET OF THE PROPOSED UIC INJECTION WELLS.
   c. UIC WELLS WILL BE INSTALLED AT LEAST 10 FEET FROM THE OUTSIDE EDGE OF THE BUILDING.
   d. VISIT THE SITE TO REVIEW ALL DETAILS OF THE WORK AND WORKING CONDITIONS AND TO VERIFY DIMENSIONS IN THE FIELD INCLUDING HEADROOM AND INTERFERENCE FROM ADJACENT STRUCTURES. NOTIFY THE CONSTRUCTION MANAGER IN WRITING OF ANY DISCREPANCY BEFORE PERFORMING ANY WORK.
   e. CONSULT OFFICIAL RECORDS OF EXISTING ABOVE AND BELOW GRADE UTILITIES, AND THEIR CONNECTIONS, TO BE FULLY INFORMED OF ALL EXISTING CONDITIONS AND LIMITATIONS AS THEY APPLY TO THIS WORK AND ITS RELATION TO OTHER CONSTRUCTION WORK.
   f. PROTECT EXISTING UTILITIES TO REMAIN WITHIN THE WORK AREA IN ACCORDANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION OVER SAME.
   g. INSTALLATION OF WELLS, PIPING, SUBSURFACE STRUCTURES, AND OTHER EQUIPMENT/MATERIALS INCLUDED ON THIS DRAWING SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATION SECTIONS:
      g.1. 312000 - EARTH MOVING
      g.2. 312319 - DEWATERING
      g.3. 312500 - EROSION AND SEDIMENTATION CONTROL (INCLUDING SWPPP)
      g.4. 312600 - MANAGEMENT AND DISPOSAL OF CONTAMINATED MEDIA
      g.5. 313200 - SOIL STABILIZATION
      g.6. 315000 - EXCAVATION SUPPORT AND PROTECTION
      g.7. 321100 - BASE COURSE
      g.8. 321216 - ASPHALT CONCRETE PAVING
      g.9. 321313 - CONCRETE PAVING
      g.10. 321400 - UNIT PAVING
      g.11. 321600 - CURBS AND SIDEWALKS
      g.12. 331000 - WATER DISTRIBUTION
      g.13. 333000 - SANITARY SEWAGE SYSTEMS
      g.14. 333913 - MANHOLES, FRAMES, AND COVERS
      g.15. 334000 - STORM DRAINAGE
      g.16. 334605 - LANDSCAPE DRAINAGE
      g.17. 335000 - NATURAL GAS DISTRIBUTION

2. WELL DRILLING
   a. ADVANCE MINIMUM 10-INCH DIAMETER BOREHOLE THROUGH FULL DEPTH INDICATED ON THE DRAWING.
   b. WELL CASING AND SCREEN SHALL BE 6-INCH SCHEDULE 40 PVC WITH FLUSH THREADED JOINTS WITH STAINLESS STEEL END CAP
   c. INSTALL WELL CASING AND SCREEN IN CENTER OF BOREHOLE
   d. VERIFY BORING BACKFILL COMPACTION AND PLACEMENT THROUGH TAPED MEASUREMENTS. BACKFILL ELEVATION VARY BY WELL. REFER TO TABLE 1.
   e. CEMENT BENTONITE GROUT TO CONSIST OF THE FOLLOWING 1 PART CEMENT, 1 PART WATER, AND 0.1 PART GRANULAR BENTONITE. ALL GROUT TO BE TREMIE PLACED.
   f. SAND BACKFILL TO BE PLACED AND HAND TAMPED IN 1' LIFTS
   g. WELL DRILLING DEPTHS AND SCREENING ELEVATIONS MAY VARY FROM THOSE LISTED IN TABLE 1 DUE TO ENCOUNTERED SUBSURFACE SOIL CONDITIONS. ACTUAL INSTALLATION DEPTHS AND SCREENING INTERVALS WILL BE DETERMINED IN THE FIELD DURING DRILLING BY THE DESIGNER'S REPRESENTATIVE ON-SITE DURING DRILLING. CONTRACTOR SHALL PROVIDE SAFE ACCESS TO THE DESIGNER'S REPRESENTATIVE TO OBSERVE AND DOCUMENT DRILLING AND WELL INSTALLATION WORK. CONTRACTOR SHALL ALSO, AT THE REQUEST OF THE DESIGNER'S REPRESENTATIVE, COLLECT SPLIT SPOON SOIL SAMPLES AHEAD OF THE DRILLING TO OBSERVE SOIL CONDITIONS.
3. UTILITY TRENCHING
   a. MINIMUM EXCAVATION AND BACKFILL DEPTHS PER DRAWING
   b. COMPLETED EXCAVATION TO BE FREE OF LOOSE STONES, PROTRUSIONS, OR STANDING WATER.
   c. ELECTRICAL CONDUIT AND WATER PIPE INSTALLATION PER ALL APPLICABLE CODE REQUIREMENTS
   d. WATER PIPING TO BE INSTALLED IN CONTINUOUS RUNS BETWEEN PERMANENT TREATMENT SEEPAGE SYSTEM LOCATION AND PITLESS ADAPTER.
   e. CONTRACTOR TO LEAVE 1' EXTRA LENGTH OF ELECTRICAL CONDUIT AND 10' EXTRA LENGTH OF WATER PIPING PER RUN INSIDE BUILDING WALL TO PERMIT FUTURE CONNECTION BY OTHERS
   f. WATER PIPING TO BE PRESSURED TESTED TO MINIMUM 50 PSI +/-0.5 PSI FOR 1 HOUR TO CONFIRM TIGHTNESS PRIOR TO FINAL BACKFILL
   g. BACKFILL TO BE PLACED IN 8" LIFTS MAX AND COMPACTED TO 95% MAXIMUM DRY DENSITY
4. WELL EQUIPMENT
   a. DROP PIPING TO CONSIST OF GALVANIZED STEEL PIPING ABOVE PITLESS AND 100 PSI RATED HDPE TUBING BELOW.
   b. HDPE END CAP BY BRASS CONNECTION FITTING WITH STAINLESS STEEL INSERT OR HEAT FUSION WELDING
   c. COORDINATE SIGNAL WIRE LENGTHS AND SWITCH DEPTHS WITH OWNER.

LEGEND

GZA_INJ_1 — PROPOSED INJECTION WELL LOCATION

EDGE OF BUILDING

PROPERTY LINE

DRAWING NOTES:

1. THE BASE MAP WAS DEVELOPED FROM ELECTRONIC FILES PROVIDED BY BOHLER ENGINEERING, ENTITLED "WYNN RESORT IN EVERETT", DATED: 9-16-2016, ORIGINAL SCALE: 1" = 20', DRAWING FILE: W151004sb28_Email DWG.
2. THE LOCATIONS OF SHOWN TIEBACKS ARE APPROXIMATE.
3. THE LOCATION OF THE PROPOSED INJECTION WELLS WERE APPROXIMATELY DETERMINED BY LINE OF SIGHT FROM MAN-MADE AND TOPOGRAPHIC SITE FEATURES. THE DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

0 10' 20' 40' 60'

BASE MAP SCALE IN FEET

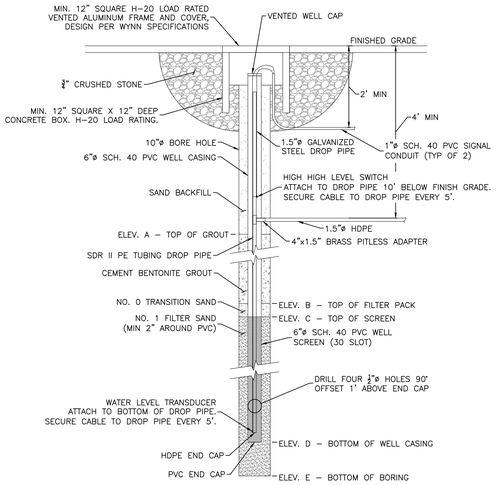


TABLE 1 - WELL ELEVATIONS

WELL	A	B	C	D	E
INJ-1	-11	-15	-16	-28	-30
INJ-2	-10	-14	-15	-27	-29
INJ-3	-10	-14	-15	-27	-29
INJ-4	-10	-14	-15	-27	-29

NOTE: ELEVATIONS INCLUDED IN TABLE 1 ARE APPROXIMATE BASED ON INTERPOLATED DATA FROM WIDELY SPACED SUBSURFACE BORINGS. CONTRACTOR AND DESIGNER TO CONFIRM SOIL CONDITIONS BY SAMPLING DURING WELL DRILLING. THE DESIGNER MAY ALTER WELL DESIGN DURING DRILLING BASED ON SOIL CONDITIONS ENCOUNTERED.

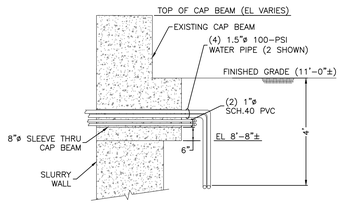
INJECTION WELL ELEVATION (TYP OF 4)

NOT TO SCALE

TABLE 2 - PROPOSED WELL LOCATIONS

WELL	NORTHING	EASTING	LATITUDE	LONGITUDE
INJ-1	2969554.03	772828.11	42° 23' 44.871"	-71° 04' 05.202"
INJ-2	2969529.26	772830.32	42° 23' 44.626"	-71° 04' 05.174"
INJ-3	2969507.19	772824.93	42° 23' 44.408"	-71° 04' 05.248"
INJ-4	2969495.80	772828.37	42° 23' 44.296"	-71° 04' 05.202"

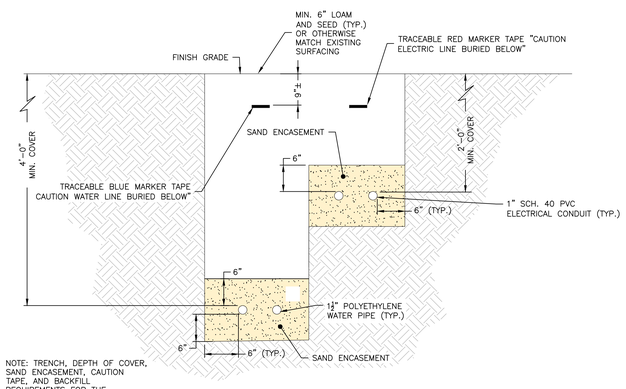
NOTE: COORDINATES SHOWN IN TABLE 2 REFERENCE MA STATE PLANE COORDINATE SYSTEM AND GEOGRAPHIC COORDINATES (LATITUDE/LONGITUDE), NAD83 US FEET. ACTUAL WELL LOCATIONS SUBJECT TO CHANGE BASED ON SITE CONDITIONS, OBSTRUCTIONS, AND UTILITY AND INFRASTRUCTURE CLEARANCE. CONTRACTOR TO COORDINATE WITH DESIGN ENGINEER AT THE TIME OF THE WELL INSTALLATION.



NOTE: INSTALL INSULATION BOARD AS SPECIFIED BY THE SITE CIVIL DESIGNER TO PROTECT PIPES FROM FREEZING UNTIL INSTALLATION DEPTH IS 4 FEET BELOW FINISH GRADE.

CAP BEAM SLEEVE DETAIL

NOT TO SCALE

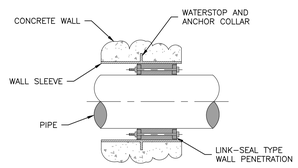


NOTE: TRENCH, DEPTH OF COVER, SAND ENCASEMENT, CAUTION TAPE, AND BACKFILL REQUIREMENTS FOR THE PERMANENT SEEPAGE DISCHARGE SYSTEM SHALL COMPLY WITH THIS TYPICAL SECTION.

TRENCH DETAIL

WATER AND ELECTRIC UTILITIES TO INJECTION WELL

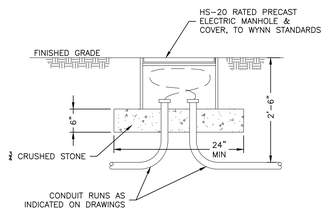
NOT TO SCALE



CUT-AWAY OF COMPLETED LINK-SEAL AND SLEEVE INSTALLATION.

TYPICAL WALL SLEEVE DETAIL

NOT TO SCALE



UNDERGROUND ELECTRIC HANDHOLE DETAIL

NOT TO SCALE

FIGURE 2
PROPOSED INJECTION WELL LOCATION
RAM PLAN MODIFICATION
MAY 22, 2019

PLOT STAMP: 5/25/2018 10:23:04 AM

JACOBS
One Broadway
Cambridge, Massachusetts
02142

P 617.491.6450
F 617.491.7104
W www.Jacobs.com

Consultants:

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

Seals:

General Notes:

Project Title:

Wynn Boston Harbor
Everett, MA

Project Client:

Wynn Design & Development

734 Pilot Road
Las Vegas, Nevada 89119

P 702.770.5000
F 702.770.5003

2018-03-29

Number	Description	Date
1	BULLETIN 43	03-29-2018

Key Plan:

Project No.: L1009100

Drawing Sheet Title:

UNDERGROUND INJECTION CONTROL WELLS AND DETAILS

Drawing Sheet Number:

UIC-1

APPENDIX A – LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. Water level readings have been made, as described in this Report, in and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.

SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

CONCEPTUAL SITE MODEL

14. Our opinions were developed, in part, based upon a comparison of site data to conditions anticipated within our Conceptual Site Model (CSM). The CSM is based on available information, and professional judgment. There are rarely sufficient data to develop a unique CSM. Therefore observations over time, and/or space, may vary from those depicted in the CSM provided in this report. In addition, the CSM should be evaluated and refined (as appropriate) whenever significant new information and/or data is obtained.

RISK CHARACTERIZATION

15. Our risk evaluation was performed in accordance with generally accepted practices of appropriate Federal and/or state regulatory agencies, and of other consultants undertaking similar studies at the same time, for similar purposes, and under similar circumstances. The findings of the risk evaluation are dependent on the numerous assumptions and uncertainties inherent in the risk characterization process. Sources of the uncertainty may include Site conditions; Site use; the nature, extent, concentration and distribution of contaminants; and the available toxicity and/or health/risk based regulatory information. Consequently, the findings of the risk characterization are not an absolute

characterization of actual risks; but rather serve to highlight potential incremental risks associated with activities indicated in the Report. Actual risks may be other than indicated in the Report.

APPENDIX B – TRANSMITTAL FORM BWSC106

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 106 12

Release Tracking Number
3 - 13341

RELEASE ABATEMENT MEASURE (RAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

A. SITE LOCATION:

1. Site Name/Location Aid: EVERETT STAGING YARD
2. Street Address: 1 BROADWAY
3. City/Town: EVERETT 4. Zip Code: 021490000

☑ 5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category.

☐ a. Tier I ☐ b. Tier ID ☑ c. Tier II

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of Initial RAM Plan (if previously submitted): 5/3/2016 (mm/dd/yyyy)

☐ 2. Submit an **Initial Release Abatement Measure (RAM) Plan**.

☐ a. Check here if the RAM is being conducted as part of the construction of a permanent structure. If checked, you must specify what type of permanent structure is to be erected in or in the immediate vicinity of the area where the RAM is to be conducted.

b. Specify type of permanent structure: (check all that apply) ☐ i. School ☐ ii. Residential ☐ iii. Commercial ☐ iv. Industrial ☐ v. Other Specify:

☑ 3. Submit a **Modified RAM Plan** of a previously submitted RAM Plan.

☐ 4. Submit a **RAM Status Report**.

☐ 5. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP, concurrent with a RAM Status Report.)

a. Type of Report: (check one) ☐ i. Initial Report ☐ ii. Interim Report ☐ iii. Final Report

b. Frequency of Submittal:

☐ i. A Remedial Monitoring Report(s) submitted every six months, concurrent with a RAM Status Report.
☐ ii. A Remedial Monitoring Report(s) submitted annually, concurrent with a RAM Status Report.

c. Number of Remedial Systems and/or Monitoring Programs:

A separate BWSC106A, RAM Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.

☐ 6. Submit a **RAM Completion Statement**.

☐ 7. Submit a **Revised RAM Completion Statement**.

8. Provide Additional RTNs:

☐ a. Check here if this RAM Submittal covers additional Release Tracking Numbers (RTNs). RTNs that have been previously linked to a Primary Tier Classified RTN do not need to be listed here. This section is intended to allow a RAM to cover more than one unclassified RTN and not show permanent linkage to a Primary Tier Classified RTN.

b. Provide the additional Release Tracking Number(s) covered by this RAM Submittal. ☐ - ☐ ☐ - ☐

☐ 9. Include in the **RAM Plan** or **Modified RAM Plan** a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT RAM:

1. Media Impacted and Receptors Affected: (check all that apply)

☐ a. Paved Surface ☐ b. Basement ☐ c. School
☐ d. Public Water Supply ☐ e. Surface Water ☐ f. Zone 2 ☐ g. Private Well ☐ h. Residence ☑ i. Soil
☑ j. Ground Water ☐ k. Sediments ☐ l. Wetland ☐ m. Storm Drain ☐ n. Indoor Air ☐ o. Air
☐ p. Soil Gas ☐ q. Sub-Slab Soil Gas ☐ r. Critical Exposure Pathway ☐ s. NAPL ☐ t. Unknown
☐ u. Others Specify:

2. Sources of the Release or TOR: (check all that apply)

☐ a. Transformer ☐ b. Fuel Tank ☐ c. Pipe
☐ d. OHM Delivery ☐ e. AST ☐ f. Drums ☐ g. Tanker Truck ☐ h. Hose ☐ i. Line
☐ j. UST Describe: ☐ k. Vehicle ☐ l. Boat/Vessel
☐ m. Unknown ☑ n. Other: HISTORIC FILL AND MANUFACTURING

3. Type of Release or TOR: (check all that apply)

☐ a. Dumping ☐ b. Fire ☐ c. AST Removal ☐ d. Overfill
☐ e. Rupture ☐ f. Vehicle Accident ☐ g. Leak ☐ h. Spill ☐ i. Test Failure ☐ j. TOR Only
☐ k. UST Removal Describe:
☐ l. Unknown ☑ m. Other: HISTORIC FILL AND MANUFACTURING

4. Identify Oils and Hazardous Materials Released: (check all that apply)

☑ a. Oils ☑ b. Chlorinated Solvents
☑ c. Heavy Metals ☑ d. Others Specify: CYANIDE

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply, for volumes list cumulative amounts)

☐ 1. Assessment and/or Monitoring Only
☐ 2. Temporary Covers or Caps
☐ 3. Deployment of Absorbent or Containment Materials
☐ 4. Temporary Water Supplies
☐ 5. Structure Venting System/HVAC Modification System
☐ 6. Temporary Evacuation or Relocation of Residents
☐ 7. Product or NAPL Recovery
☐ 8. Fencing and Sign Posting
☑ 9. Groundwater Treatment Systems
☐ 10. Soil Vapor Extraction
☑ 11. Remedial Additives
☐ 12. Air Sparging
☐ 13. Active Exposure Pathway Mitigation System
☐ 14. Passive Exposure Pathway Mitigation System
☐ 15. Monitored Natural Attenuation
☐ 16. In-Situ Chemical Oxidation

D. DESCRIPTION OF RESPONSE ACTIONS (cont.): (check all that apply, for volumes list cumulative amounts)

☐ 17. Excavation of Contaminated Soils

☐ a. Re-use, Recycling or Treatment ☐ i. On Site Estimated volume in cubic yards _____

☐ ii. Off Site Estimated volume in cubic yards _____

iia. Receiving Facility: _____ Town: _____ State: ____

iib. Receiving Facility: _____ Town: _____ State: ____

iii. Describe:

☐ b. Store ☐ i. On Site Estimated volume in cubic yards _____

☐ ii. Off Site Estimated volume in cubic yards _____

iia. Receiving Facility: _____ Town: _____ State: ____

iib. Receiving Facility: _____ Town: _____ State: ____

☐ c. Landfill ☐ i. Cover Estimated volume in cubic yards _____

Receiving Facility: _____ Town: _____ State: ____

☐ ii. Disposal Estimated volume in cubic yards _____

Receiving Facility: _____ Town: _____ State: ____

☐ 18. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount:

b. Receiving Facility: _____ Town: _____ State: ____

c. Receiving Facility: _____ Town: _____ State: ____

☐ 19. Removal of Other Contaminated Media:

a. Specify Type and Volume:

b. Receiving Facility: _____ Town: _____ State: ____

c. Receiving Facility: _____ Town: _____ State: ____

☑ 20. Other Response Actions:

Describe: MODIFICATION OF PERMANENT WATER TREATMENT SYSTEM THROUGH USE OF REMEDIAL ADDITIVES (ACID NEUTRALIZATION AND METALS SEQUESTERING)

☐ 21. Use of Innovative Technologies:

Describe:

E. LSP SIGNATURE AND STAMP :

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that a **Release Abatement Measure Plan** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Release Abatement Measure Status Report** and/or **Remedial Monitoring Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply (ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Release Abatement Measure Completion Statement** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal:

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 8107
2. First Name: LAWRENCE 3. Last Name: FELDMAN
4. Telephone: 7812783700 5. Ext.: 6. Email:
7. Signature: LAWRENCE FELDMAN
8. Date: 5/28/2019 (mm/dd/yyyy) 9. LSP Stamp:

RELEASE ABATEMENT MEASURE (RAM) TRANSMITTAL FORM
Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

F. PERSON UNDERTAKING RAM:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions

2. Name of Organization: WYNN MA LLC

3. Contact First Name: ROBERT 4. Last Name: DESALVIO

5. Street: 101 STATION LANDING STE 2200 6. Title: PRESIDENT

7. City/Town: MEDFORD 8. State: MA 9. ZIP Code: 021555134

10. Telephone: 8577707000 11. Ext.: 12. Email: robert.desalvio@encore

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING RAM:

☐ Check here to change relationship

☑ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter

☑ e. Other RP or PRP Specify: ELIGIBLE OWNER/OPERATOR

☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ 4. Any Other Person Undertaking RAM Specify Relationship:

H. REQUIRED ATTACHMENT AND SUBMITTALS:

☐ 1. Check here if any Remediation Waste, generated as a result of this RAM, will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement. You must submit a Phase IV Remedy Implementation Plan along with the appropriate transmittal form (BWSC108).

☐ 2. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

☐ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the implementation of a Release Abatement Measure.

☐ 4. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to bwsc.edep@state.ma.us.

☐ 5. If a RAM Compliance Fee is required for this RAM, check here to certify that a RAM Compliance Fee was submitted to DEP, P. O. Box 4062, Boston, MA 02211.

☑ 6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE ABATEMENT MEASURE (RAM) TRANSMITTAL FORM
Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

BWSC 106 12

Release Tracking Number
3 - 13341

I. CERTIFICATION OF PERSON UNDERTAKING RAM:

1. I, ROBERT DESALVIO , attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: ROBERT DESALVIO (Signature)
3. Title: PRESIDENT
4. For: WYNN MA LLC (Name of person or entity recorded in Section F)
5. Date: 5/28/2019 (mm/dd/yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section F.

7. Street:
8. City/Town:
9. State:
10. ZIP Code:
11. Telephone:
12. Ext.:
13. Email:

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO $10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE

Date Stamp (DEP USE ONLY:)

Received by DEP on
5/28/2019 3:00:35 PM

APPENDIX C - MATERIAL SAFETY DATA SHEETS (MSDS)

SAFETY DATA SHEET

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID:	REDUX-390		
Product Name:	REDUX-390		
Revision Date:	Oct 06, 2017	**Date Printed:**	Oct 06, 2017
Version:	1.0	**Supersedes Date:**	N.A.
Manufacturer's Name:	Lockwood Remediation Technologies, LLC		
Address:	89 Crawford Street, Leominster, Massachusetts 01453		
Emergency Phone:	Chemtrec 800-424-9300		
Information Phone Number:	(774) 450-7177		
Fax:			

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Serious Eye Damage - Category 1

Skin Irritation - Category 2

Pictograms

Signal Word

Danger

Hazardous Statements - Health

Causes serious eye damage

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wear protective gloves/protective clothing/eye protection/face protection.

Wash thoroughly after handling.

Precautionary Statements - Response

Absorb spillage to prevent material damage.

IF IN EYES: 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.

IF ON SKIN: Wash with plenty of water.

Specific treatment (see first-aid on this SDS).

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

Store in a corrosive resistant container with a resistant inner liner.

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

Acute toxicity of 5.24% of the mixture is unknown

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
Proprietary	ORGANIC ACID	2% - 4%
0001310-73-2	SODIUM HYDROXIDE	0.9% - 2%

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

SECTION 4) FIRST-AID MEASURES

Inhalation

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/. If breathing has stopped, trained personnel should begin rescue breathing or, if the heart has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED).

Eye Contact

Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a flushing duration of 30 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately call a POISON CENTER/doctor.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Give 1 to 2 cups of milk or water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, foam, carbon dioxide. Sand or earth may be used for small fires only.

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

Do not use direct water stream since this may cause fire to spread.

Specific Hazards in Case of Fire

In case of fire, hazardous decomposition products may include sulphur oxides.

Fire-Fighting Procedures

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Special Protective Actions

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Absorb spill with absorbent material or vacuum spill into polyethylene lined steel or plastic drums.

Do not touch or walk through spilled material.

If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

Recommended Equipment

Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

Personal Precautions

Avoid breathing vapor or mist. Avoid contact with skin, eye or clothing. Ensure adequate ventilation. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

Methods and Materials for Containment and Cleaning Up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Contaminated absorbent material may pose the same hazard as the spilled product.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use.
Do not get in eyes, on skin or on clothing.
Do not breathe vapors or mists.
Use good personal hygiene practices.
Eating, drinking and smoking in work areas is prohibited.
Remove contaminated clothing and protective equipment before entering eating areas.
Eyewash stations and showers should be available in areas where this material is used and stored.

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.
Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	OSHA TWA (ppm)	OSHA TWA (mg/m3)	OSHA STEL (ppm)	OSHA STEL (mg/m3)	OSHA Tables (Z1, Z2, Z3)	OSHA Carcinogen	OSHA Skin designation	NIOSH TWA (ppm)	NIOSH TWA (mg/m3)	NIOSH STEL (ppm)	NIOSH STEL (mg/m3)	NIOSH Carcinogen
SODIUM HYDROXIDE		2			1							

Chemical Name	ACGIH TWA (ppm)	ACGIH TWA (mg/m3)	ACGIH STEL (ppm)	ACGIH STEL (mg/m3)	ACGIH Carcinogen	ACGIH Notations	ACGIH TLV Basis
SODIUM HYDROXIDE				C 2			URT, eye, & skin irr

(C) - Ceiling limit, irr - Irritation, URT - Upper respiratory tract

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	8.64 lb/gal
Specific Gravity	1.03

Appearance	Clear pale yellow liquid
pH	6
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	Miscible
Viscosity	N/A
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

Avoid heat, sparks, flame, high temperature and contact with incompatible materials.

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation, ingestion, skin absorption.

Acute Toxicity

No Data Available

Aspiration Hazard

No Data Available

Carcinogenicity

No Data Available

Germ Cell Mutagenicity

No Data Available

Reproductive Toxicity

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye damage

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Toxicity

No data available.

No Data Available

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.
Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

UN/NA #: Not regulated
Proper Shipping Name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable

IMDG Information

UN/NA #: Not regulated
Proper Shipping Name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable
Marine Pollutant: No data available

IATA Information

UN/NA #: Not regulated
Proper Shipping Name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable
Marine Pollutant: No data available

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
Proprietary	ORGANIC ACID	2% - 4%	SARA312,TSCA
0001310-73-2	SODIUM HYDROXIDE	0.9% - 2%	CERCLA,SARA312,TSCA,

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL

Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

DISCLAIMER

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

MSDS Number: **S8234** * * * * * *Effective Date:* ***11/09/07*** * * * * * *Supercedes:* ***02/04/05***

SULFURIC ACID, 52 - 100 %

1. Product Identification

Synonyms: Oil of vitriol; Babcock acid; sulphuric acid
CAS No.: 7664-93-9
Molecular Weight: 98.08
Chemical Formula: H2SO4 in H2O
Product Codes:
J.T. Baker: 5030, 5137, 5374, 5802, 5815, 5858, 5859, 5868, 5889, 5897, 5961, 5971, 5997, 6163, 6902, 9671, 9673, 9674, 9675, 9676, 9679, 9680, 9681, 9682, 9684, 9687, 9691, 9693, 9694
Mallinckrodt: 21201, 2468, 2876, 2878, 2900, 2904, 3780, 4222, 5524, 5557, H644, H850, H976, H996, V651, XL003

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sulfuric Acid	7664-93-9	52 - 100%	Yes
Water	7732-18-5	0 - 48%	No

3. Hazards Identification

Emergency Overview

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR CONTACTED WITH SKIN. HARMFUL IF INHALED. AFFECTS TEETH. WATER REACTIVE. CANCER HAZARD. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Poison)
Flammability Rating: 0 - None
Reactivity Rating: 2 - Moderate
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)

Potential Health Effects

Inhalation:
Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.
Ingestion:
Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock is often the immediate cause of death.
Skin Contact:
Corrosive. Symptoms of redness, pain, and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow skin contact or ingestion. Circulatory shock is often the immediate cause of death.
Eye Contact:
Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Can cause blindness.
Chronic Exposure:
Long-term exposure to mist or vapors may cause damage to teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

---

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.
Ingestion:
DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.
Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Excess acid on skin can be neutralized with a 2% solution of bicarbonate of soda. Call a physician immediately.
Eye Contact:
Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

---

5. Fire Fighting Measures

Fire:
Concentrated material is a strong dehydrating agent. Reacts with organic materials and may cause ignition of finely divided materials on contact.
Explosion:
Contact with most metals causes formation of flammable and explosive hydrogen gas.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Do not use water on material. However, water spray may be used to keep fire exposed containers cool.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers.

---

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

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7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add the acid to water; never add water to the acid. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Sulfuric Acid:
- OSHA Permissible Exposure Limit (PEL) -
1 mg/m3 (TWA)
- ACGIH Threshold Limit Value (TLV) -
0.2 mg/m3(T) (TWA) for sulfuric acid - A2 Suspected Human Carcinogen for sulfuric acid contained in strong inorganic mists.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

9. Physical and Chemical Properties

Appearance:
Clear oily liquid.
Odor:
Odorless.
Solubility:
Miscible with water, liberates much heat.
Specific Gravity:
1.84 (98%), 1.40 (50%), 1.07 (10%)
pH:
1 N solution (ca. 5% w/w) = 0.3; 0.1 N solution (ca. 0.5% w/w) = 1.2; 0.01 N solution (ca. 0.05% w/w) = 2.1.
% Volatiles by volume @ 21C (70F):
No information found.
Boiling Point:
ca. 290C (ca. 554F) (decomposes at 340C)
Melting Point:
3C (100%), -32C (93%), -38C (78%), -64C (65%).
Vapor Density (Air=1):
3.4
Vapor Pressure (mm Hg):
1 @ 145.8C (295F)
Evaporation Rate (BuAc=1):
No information found.

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Concentrated solutions react violently with water, spattering and liberating heat.
Hazardous Decomposition Products:
Toxic fumes of oxides of sulfur when heated to decomposition. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas, and with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

Hazardous Polymerization:
Will not occur.
Incompatibilities:
Water, potassium chlorate, potassium perchlorate, potassium permanganate, sodium, lithium, bases, organic material, halogens, metal acetylides, oxides and hydrides, metals (yields hydrogen gas), strong oxidizing and reducing agents and many other reactive substances.
Conditions to Avoid:
Heat, moisture, incompatibles.

---

11. Toxicological Information

Toxicological Data:
Oral rat LD50: 2140 mg/kg; inhalation rat LC50: 510 mg/m3/2H; standard Draize, eye rabbit, 250 ug (severe); investigated as a tumorigen, mutagen, reproductive effector.
Carcinogenicity:
Cancer Status: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Sulfuric Acid (7664-93-9)	No	No	None
Water (7732-18-5)	No	No	None

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material may leach into groundwater. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry deposition.
Environmental Toxicity:
LC50 Flounder 100 to 330 mg/l/48 hr aerated water/Conditions of bioassay not specified; LC50 Shrimp 80 to 90 mg/l/48 hr aerated water /Conditions of bioassay not specified; LC50 Prawn 42.5 ppm/48 hr salt water /Conditions of bioassay not specified.
This material may be toxic to aquatic life.

---

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: SULFURIC ACID (WITH MORE THAN 51% ACID)
Hazard Class: 8
UN/NA: UN1830
Packing Group: II
Information reported for product/size: 440LB

International (Water, I.M.O.)

Proper Shipping Name: SULFURIC ACID (WITH MORE THAN 51% ACID)
Hazard Class: 8
UN/NA: UN1830
Packing Group: II
Information reported for product/size: 440LB

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Sulfuric Acid (7664-93-9)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.

```
  ------------------------------------------  -----  ---   ----  -
----
  Sulfuric Acid (7664-93-9)                    Yes   Yes   No
Yes
  Water (7732-18-5)                            Yes   Yes   No
Yes

  --------\Federal, State & International Regulations - Part 1\--------
--------
                                           -SARA 302-    ------SARA
313------
  Ingredient                               RQ    TPQ     List
Chemical Catg.
  ---------------------------------------  ---   -----   ----  ------
--------
  Sulfuric Acid (7664-93-9)                1000  1000    Yes
No
  Water (7732-18-5)                        No    No      No
No

  --------\Federal, State & International Regulations - Part 2\--------
--------
                                                         -RCRA-    -
TSCA-
  Ingredient                               CERCLA     261.33     8(d)
  ---------------------------------------  ------     ------    -----
-
  Sulfuric Acid (7664-93-9)                1000       No         No
  Water (7732-18-5)                        No         No         No


Chemical Weapons Convention:  No     TSCA 12(b):  No     CDTA:  Yes
SARA 311/312:  Acute: Yes      Chronic: Yes  Fire: No  Pressure: No
Reactivity: Yes         (Pure / Liquid)
```

Australian Hazchem Code: 2P
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

16. Other Information

NFPA Ratings: Health: **3** Flammability: **0** Reactivity: **2** Other: **Water reactive**
Label Hazard Warning:
POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR CONTACTED WITH SKIN. HARMFUL IF INHALED. AFFECTS TEETH. WATER REACTIVE. CANCER HAZARD. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER. Risk of cancer depends on duration and

level of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.
Do not breathe mist.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Do not contact with water.

Label First Aid:

In all cases call a physician immediately. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. Excess acid on skin can be neutralized with a 2% bicarbonate of soda solution. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

****

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

APPENDIX D – LABORATORY ANALYTICAL RESULTS

ANALYTICAL REPORT

Lab Number:	L1912599
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/03/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912599
Report Date: 04/03/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1912599-01	SP-5	WATER	ONE BROADWAY, EVERETT, MA	03/28/19 21:30	03/29/19
L1912599-02	SP-6	WATER	ONE BROADWAY, EVERETT, MA	03/28/19 21:45	03/29/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1912599

Project Number: 01.0171521.25 **Report Date:** 04/03/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912599
Project Number:	01.0171521.25	**Report Date:**	04/03/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912599
Project Number:	01.0171521.25	**Report Date:**	04/03/19

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

L1912599-01 and -02: The sample was received above the appropriate pH for the Dissolved Metals analysis. The laboratory added additional HNO3 to a pH <2.

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/03/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912599
Report Date: 04/03/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1912599
Project Number: 01.0171521.25
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912599-01
Client ID: SP-5
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 03/28/19 21:30
Date Received: 03/29/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	2370		mg/l	6.60	NA	10	04/02/19 11:31	04/02/19 20:48	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:57	EPA 3005A	97,6010D	AB
Iron, Total	85.0		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 19:57	EPA 3005A	97,6010D	AB
Manganese, Total	4.90		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:57	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:01	EPA 3005A	97,6010D	AB
Iron, Dissolved	88.5		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 19:01	EPA 3005A	97,6010D	AB
Manganese, Dissolved	5.09		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:01	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1912599
Project Number: 01.0171521.25
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912599-02
Client ID: SP-6
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 03/28/19 21:45
Date Received: 03/29/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	90.9		mg/l	0.660	NA	1	04/02/19 11:31	04/02/19 20:01	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.070		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 20:01	EPA 3005A	97,6010D	AB
Iron, Total	0.088		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 20:01	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 20:01	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.069		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:06	EPA 3005A	97,6010D	AB
Iron, Dissolved	0.104		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 19:06	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:06	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1912599
Report Date: 04/03/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1222121-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 18:45	97,6010D	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 18:45	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 18:45	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1222122-1										
Copper, Total	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:31	97,6010D	AB
Iron, Total	ND		mg/l	0.050	--	1	04/02/19 11:31	04/02/19 19:31	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/02/19 11:31	04/02/19 19:31	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-02 Batch: WG1222164-1										
Hardness	ND		mg/l	0.660	NA	1	04/02/19 11:31	04/02/19 19:31	1,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912599

Report Date: 04/03/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1222121-2 WG1222121-3								
Copper, Dissolved	93		92		80-120	1		20
Iron, Dissolved	102		99		80-120	3		20
Manganese, Dissolved	90		88		80-120	2		20
MCP Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1222122-2 WG1222122-3								
Copper, Total	94		91		80-120	3		20
Iron, Total	100		97		80-120	3		20
Manganese, Total	90		87		80-120	3		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 Batch: WG1222164-2 WG1222164-3								
Hardness	96		93		80-120	3		

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912599
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912599-01
Client ID: SP-5
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 03/28/19 21:30
Date Received: 03/29/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.013		mg/l	0.005	--	1	04/02/19 12:35	04/02/19 15:43	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	9200		mg/l	20	--	2	-	04/02/19 06:35	121,2540C	DW
Solids, Total Suspended	84.		mg/l	5.0	NA	1	-	04/02/19 13:10	121,2540D	DR
pH (H)	6.5		SU	-	NA	1	-	03/30/19 04:07	121,4500H+-B	MA

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1912599
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912599-02
Client ID: SP-6
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 03/28/19 21:45
Date Received: 03/29/19
Field Prep: Refer to COC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.014		mg/l	0.005	--	1	04/02/19 12:35	04/02/19 15:44	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	4500		mg/l	10	--	1	-	04/02/19 06:35	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/02/19 13:10	121,2540D	DR
pH (H)	12.3		SU	-	NA	1	-	03/30/19 04:07	121,4500H+-B	MA

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1912599
Report Date: 04/03/19

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): 01-02 Batch: WG1221983-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/02/19 06:35	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1222031-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/02/19 13:10	121,2540D	DR
MCP General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1222150-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/02/19 12:35	04/02/19 16:25	97,9014	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912599

Report Date: 04/03/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1221983-2								
Solids, Total Dissolved	93		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1222022-1								
pH	101		-		99-101	-		5
MCP General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1222150-2 WG1222150-3								
Cyanide, Total	94		93		80-120	1		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912599

Report Date: 04/03/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1221983-3 QC Sample: L1912599-01 Client ID: SP-5						
Solids, Total Dissolved	9200	9200	mg/l	0		10
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1222022-2 QC Sample: L1912599-01 Client ID: SP-5						
pH (H)	6.5	6.5	SU	0		5

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912599
Report Date: 04/03/19

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(*)
L1912599-01A	Plastic 250ml HNO3 preserved	A	7	<2	3.5	N	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1912599-01B	Plastic 250ml HNO3 preserved	A	<2	<2	3.5	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1912599-01C	Plastic 250ml NaOH preserved	A	>12	>12	3.5	Y	Absent		MCP-TCN9014-10(14)
L1912599-01D	Plastic 250ml unpreserved	A	7	7	3.5	Y	Absent		PH-4500(.01),TDS-2540(7)
L1912599-01E	Plastic 950ml unpreserved	A	7	7	3.5	Y	Absent		TSS-2540(7)
L1912599-02A	Plastic 250ml HNO3 preserved	A	7	<2	3.5	N	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1912599-02B	Plastic 250ml HNO3 preserved	A	<2	<2	3.5	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1912599-02C	Plastic 250ml NaOH preserved	A	>12	>12	3.5	Y	Absent		MCP-TCN9014-10(14)
L1912599-02D	Plastic 250ml unpreserved	A	12	12	3.5	Y	Absent		PH-4500(.01),TDS-2540(7)
L1912599-02E	Plastic 950ml unpreserved	A	12	12	3.5	Y	Absent		TSS-2540(7)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912599
Project Number:	01.0171521.25	**Report Date:**	04/03/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912599
Project Number:	01.0171521.25	**Report Date:**	04/03/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912599
Project Number:	01.0171521.25	**Report Date:**	04/03/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE OF

ALPHA ANALYTICAL
World Class Chemistry

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 3/29/19

ALPHA Job #: L1912599

Project Information

Project Name: Encore Boston Harbor

Project Location: One Broadway, Everett MA

Project #: 01.0171521.25

Project Manager: Matthew Smith

ALPHA Quote #:

Client Information

Client: GZA

Address: 249 Vanderbilt Ave

Norwood, MA

Phone: (781) 278-3700

Fax: (781) 278-5752

Email: Matthew.Smith@gza.com, Daniel.Scanlon@gza.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☐ Standard ☒ Rush (ONLY IF PRE-APPROVED)

Due Date: RUSH 3-day Time:

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

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☒ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

Note: Dissolved Metals were field filtered.

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Total and Dissolved Iron	Total and Dissolved Manganese	Total and Dissolved Copper	Total Cyanide	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Hardness	pH					Sample Specific Comments	TOTAL # BOTTLES
12599-01	SP-5	3-28-19	21:30	GW	DRS	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐		
02	SP-6	3-28-19	21:45	GW	DRS	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		

Container Type	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	3/28/19 @2300	[signature] AAC	3/29/19 1200
[signature] AAC	3/29 1725	[signature] MCL	3/29/19 1725

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.

FORM NO: 01-01(I) (rev. 5-JAN-12)

ANALYTICAL REPORT

Lab Number:	L1912669
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/03/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912669
Report Date: 04/03/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1912669-01	SP 9	WATER	ONE BROADWAY, EVERETT, MA	03/29/19 11:00	03/29/19
L1912669-02	SP 3	WATER	ONE BROADWAY, EVERETT, MA	03/29/19 13:00	03/29/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1912669

Project Number: 01.0171521.25 **Report Date:** 04/03/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912669
Project Number:	01.0171521.25	**Report Date:**	04/03/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912669
Project Number:	01.0171521.25	**Report Date:**	04/03/19

Case Narrative (continued)

MCP Related Narratives

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/03/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912669
Report Date: 04/03/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1912669
Project Number: 01.0171521.25
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912669-01
Client ID: SP 9
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 03/29/19 11:00
Date Received: 03/29/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	63.2		mg/l	0.660	NA	1	04/01/19 19:00	04/02/19 21:10	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.066		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 21:10	EPA 3005A	97,6010D	AB
Iron, Total	0.133		mg/l	0.050	--	1	04/01/19 19:00	04/02/19 21:10	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 21:10	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.068		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 19:40	EPA 3005A	97,6010D	AB
Iron, Dissolved	0.076		mg/l	0.050	--	1	04/01/19 19:30	04/02/19 19:40	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 19:40	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1912669
Project Number: 01.0171521.25
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912669-02
Client ID: SP 3
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 03/29/19 13:00
Date Received: 03/29/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1060		mg/l	0.660	NA	1	04/01/19 19:00	04/02/19 21:29	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.022		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 21:29	EPA 3005A	97,6010D	AB
Iron, Total	0.072		mg/l	0.050	--	1	04/01/19 19:00	04/02/19 21:29	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 21:29	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.023		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 19:44	EPA 3005A	97,6010D	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	04/01/19 19:30	04/02/19 19:44	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 19:44	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1912669

Project Number: 01.0171521.25 **Report Date:** 04/03/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1221820-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 18:49	97,6010D	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	04/01/19 19:30	04/02/19 18:49	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/01/19 19:30	04/02/19 18:49	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1221834-1										
Copper, Total	ND		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 20:29	97,6010D	AB
Iron, Total	ND		mg/l	0.050	--	1	04/01/19 19:00	04/02/19 20:29	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/01/19 19:00	04/02/19 20:29	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-02 Batch: WG1222167-1										
Hardness	ND		mg/l	0.660	NA	1	04/01/19 19:00	04/02/19 20:29	1,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912669

Report Date: 04/03/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1221820-2 WG1221820-3								
Copper, Dissolved	92		95		80-120	3		20
Iron, Dissolved	99		102		80-120	3		20
Manganese, Dissolved	88		90		80-120	2		20
MCP Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1221834-2 WG1221834-3								
Copper, Total	94		96		80-120	2		20
Iron, Total	113		111		80-120	2		20
Manganese, Total	98		98		80-120	0		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 Batch: WG1222167-2 WG1222167-3								
Hardness	104		104		80-120	0		

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1912669
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912669-01
Client ID: SP 9
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 03/29/19 11:00
Date Received: 03/29/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.009		mg/l	0.005	--	1	03/31/19 14:35	04/01/19 13:14	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	5500		mg/l	10	--	1	-	04/01/19 11:10	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/01/19 10:00	121,2540D	DR
pH (H)	12.5		SU	-	NA	1	-	03/29/19 21:03	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912669
Report Date: 04/03/19

SAMPLE RESULTS

Lab ID: L1912669-02
Client ID: SP 3
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 03/29/19 13:00
Date Received: 03/29/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.013		mg/l	0.005	--	1	03/31/19 14:35	04/01/19 13:15	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6000		mg/l	10	--	1	-	04/01/19 11:10	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/01/19 10:00	121,2540D	DR
pH (H)	12.0		SU	-	NA	1	-	03/29/19 21:03	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1912669
Report Date: 04/03/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1221515-1										
Cyanide, Total	ND		mg/l	0.005	--	1	03/31/19 14:35	04/01/19 12:50	97,9014	LH
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1221614-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/01/19 11:10	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1221646-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/01/19 10:00	121,2540D	DR

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912669

Report Date: 04/03/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1221256-1								
pH	100		-		99-101	-		5
MCP General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1221515-2 WG1221515-3								
Cyanide, Total	101		101		80-120	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1221614-2								
Solids, Total Dissolved	89		-		80-120	-		

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1912669

Report Date: 04/03/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1221614-3 QC Sample: L1912669-01 Client ID: SP 9						
Solids, Total Dissolved	5500	5400	mg/l	2		10

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1912669
Report Date: 04/03/19

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(*)
L1912669-01A	Plastic 250ml unpreserved	A	12	12	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1912669-01B	Plastic 250ml unpreserved	A	12	12	2.4	Y	Absent		-
L1912669-01C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1912669-01E	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1912669-01F	Plastic 950ml unpreserved	A	12	12	2.4	Y	Absent		TSS-2540(7)
L1912669-01X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1912669-02A	Plastic 250ml unpreserved	A	11	11	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1912669-02B	Plastic 250ml unpreserved	A	11	11	2.4	Y	Absent		-
L1912669-02C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1912669-02E	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1912669-02F	Plastic 950ml unpreserved	A	11	11	2.4	Y	Absent		TSS-2540(7)
L1912669-02X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912669
Project Number:	01.0171521.25	**Report Date:**	04/03/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912669
Project Number:	01.0171521.25	**Report Date:**	04/03/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1912669
Project Number:	01.0171521.25	**Report Date:**	04/03/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE_____ OF _____

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 3/29/19

ALPHA Job #: L912669

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: 781-278-5752
Email: Matthew.smith@gza.com
Daniel.scanlon@gza.com
Additional Project Information:

Project Information

Project Name: Encore Boston Harbor
Project Location: one Broadway, Everett MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Rush 3-Day

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Hardness, ph, total cyanide
total suspended solids (TSS)
total and dissolved solids (TDS)
total and dissolved copper
total and dissolved manganese
total and dissolved iron

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Hardness	ph	total cyanide	total suspended solids (TSS)	total and dissolved solids (TDS)	total and dissolved copper	total and dissolved manganese	total and dissolved iron	Sample Comments	TOTAL # BOTTLES
L2669-01	SP 9	3/29/19	11:00	GW	EN	✓	✓	✓	✓	✓	✓				
02	SP 3	3/29/19	13:00	GW	EN	✓	✓	✓	✓	✓	✓				

Container Type															
Preservative															

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	3/29/19 14:00	AMC	3/29/19 1400
	3/29/19 1880		1880

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1913069
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/05/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913069
Report Date: 04/05/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1913069-01	SP 1	WATER	ONE BROADWAY, EVERETT, MA	04/02/19 11:00	04/02/19
L1913069-02	SP 4	WATER	ONE BROADWAY, EVERETT, MA	04/02/19 11:30	04/02/19
L1913069-03	SP 7	WATER	ONE BROADWAY, EVERETT, MA	04/02/19 13:00	04/02/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1913069

Project Number: 01.0171521.25 **Report Date:** 04/05/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913069
Project Number:	01.0171521.25	**Report Date:**	04/05/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913069
Project Number:	01.0171521.25	**Report Date:**	04/05/19

Case Narrative (continued)

MCP Related Narratives

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/05/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913069
Report Date: 04/05/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1913069
Project Number: 01.0171521.25
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-01
Client ID: SP 1
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/02/19 11:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	2420		mg/l	0.660	NA	1	04/03/19 20:02	04/04/19 18:17	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:17	EPA 3005A	97,6010D	MC
Iron, Total	178		mg/l	0.050	--	1	04/03/19 20:02	04/04/19 18:17	EPA 3005A	97,6010D	MC
Manganese, Total	8.63		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:17	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:02	EPA 3005A	97,6010D	LC
Iron, Dissolved	149		mg/l	0.050	--	1	04/03/19 19:44	04/04/19 14:02	EPA 3005A	97,6010D	LC
Manganese, Dissolved	8.42		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:02	EPA 3005A	97,6010D	LC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1913069
Project Number: 01.0171521.25
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-02
Client ID: SP 4
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/02/19 11:30
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	2410		mg/l	0.660	NA	1	04/03/19 20:02	04/04/19 18:21	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:21	EPA 3005A	97,6010D	MC
Iron, Total	65.8		mg/l	0.050	--	1	04/03/19 20:02	04/04/19 18:21	EPA 3005A	97,6010D	MC
Manganese, Total	4.62		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:21	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:25	EPA 3005A	97,6010D	LC
Iron, Dissolved	28.6		mg/l	0.050	--	1	04/03/19 19:44	04/04/19 14:25	EPA 3005A	97,6010D	LC
Manganese, Dissolved	4.50		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:25	EPA 3005A	97,6010D	LC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1913069
Project Number: 01.0171521.25
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-03
Client ID: SP 7
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/02/19 13:00
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1680		mg/l	0.660	NA	1	04/03/19 20:02	04/04/19 18:26	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:26	EPA 3005A	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/03/19 20:02	04/04/19 18:26	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:26	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.010		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:30	EPA 3005A	97,6010D	LC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/03/19 19:44	04/04/19 14:30	EPA 3005A	97,6010D	LC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 14:30	EPA 3005A	97,6010D	LC

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1913069

Project Number: 01.0171521.25 **Report Date:** 04/05/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1222741-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 12:07	97,6010D	LC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/03/19 19:44	04/04/19 12:07	97,6010D	LC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/03/19 19:44	04/04/19 12:07	97,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1222743-1										
Copper, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:04	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/03/19 20:02	04/04/19 18:04	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/03/19 20:02	04/04/19 18:04	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-03 Batch: WG1222744-1										
Hardness	ND		mg/l	0.660	NA	1	04/03/19 20:02	04/04/19 18:04	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913069

Report Date: 04/05/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1222741-2 WG1222741-3								
Copper, Dissolved	100		101		80-120	1		20
Iron, Dissolved	94		97		80-120	3		20
Manganese, Dissolved	93		95		80-120	2		20
MCP Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1222743-2 WG1222743-3								
Copper, Total	91		92		80-120	1		20
Iron, Total	96		98		80-120	2		20
Manganese, Total	94		95		80-120	1		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-03 Batch: WG1222744-2 WG1222744-3								
Hardness	103		104		80-120	1		

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913069
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-01
Client ID: SP 1
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/02/19 11:00
Date Received: 04/02/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.015		mg/l	0.005	--	1	04/03/19 13:55	04/03/19 16:24	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	9700		mg/l	20	--	2	-	04/03/19 09:45	121,2540C	DW
Solids, Total Suspended	48.		mg/l	5.0	NA	1	-	04/03/19 13:25	121,2540D	DR
pH	6.4	(H)	SU	-	NA	1	-	04/02/19 21:27	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913069
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-02
Client ID: SP 4
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 04/02/19 11:30
Date Received: 04/02/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.025		mg/l	0.005	--	1	04/03/19 13:55	04/03/19 16:25	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	9400		mg/l	20	--	2	-	04/03/19 09:45	121,2540C	DW
Solids, Total Suspended	68.		mg/l	5.0	NA	1	-	04/03/19 13:25	121,2540D	DR
pH (H)	6.8		SU	-	NA	1	-	04/02/19 21:27	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913069
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913069-03
Client ID: SP 7
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/02/19 13:00
Date Received: 04/02/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.0090		mg/l	0.005	--	1	04/03/19 13:55	04/03/19 16:26	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	8300		mg/l	10	--	1	-	04/03/19 09:45	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/03/19 13:25	121,2540D	DR
pH (H)	11.6		SU	-	NA	1	-	04/02/19 21:27	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913069
Report Date: 04/05/19

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): 01-03 Batch: WG1222393-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/03/19 09:45	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1222449-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/03/19 13:25	121,2540D	DR
MCP General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1222580-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/03/19 13:55	04/03/19 16:13	97,9014	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913069

Report Date: 04/05/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1222314-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1222393-2								
Solids, Total Dissolved	91		-		80-120	-		
MCP General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1222580-2 WG1222580-3								
Cyanide, Total	99		97		80-120	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913069

Report Date: 04/05/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1222314-2 QC Sample: L1913069-01 Client ID: SP 1						
pH (H)	6.4	6.4	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1222393-3 QC Sample: L1913069-01 Client ID: SP 1						
Solids, Total Dissolved	9700	9300	mg/l	4		10

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913069
Report Date: 04/05/19

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(*)
L1913069-01A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1913069-01B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1913069-01C	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1913069-01D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1913069-01E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1913069-01X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1913069-02A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1913069-02B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1913069-02C	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1913069-02D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1913069-02E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1913069-02X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1913069-03A	Plastic 250ml unpreserved	A	11	11	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1913069-03B	Plastic 250ml unpreserved	A	11	11	2.4	Y	Absent		-
L1913069-03C	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1913069-03D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1913069-03E	Plastic 950ml unpreserved	A	11	11	2.4	Y	Absent		TSS-2540(7)
L1913069-03X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913069
Project Number:	01.0171521.25	**Report Date:**	04/05/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913069
Project Number:	01.0171521.25	**Report Date:**	04/05/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913069
Project Number:	01.0171521.25	**Report Date:**	04/05/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 4/2/19

ALPHA Job #: L1913069

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: GZA
Address: 249 Vanderbilt Ave, Norwood, MA
Phone: 781-278-5752
Email: Matthew.smith@gza.com, daniel.scanlon@gza.com

Additional Project Information:

Project Information

Project Name: Encore Boston Harbor
Project Location: one Broadway Everett MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Rush 3 Day

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint

Handwritten analyses: (1) Hardness, pH, total cyanide; (2) total suspended solids (TSS); (3) total dissolved solids (TDS); (4) total and dissolved copper; (5) total and dissolved manganese; (6) total and dissolved iron

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Hardness, pH, total cyanide	TSS	TDS	total and dissolved copper	total and dissolved manganese	total and dissolved iron	Sample Comments	TOTAL # BOTTLES
13069-01	SP 1	4/2/19	11:00	GW	EN	✓	✓	✓	✓	✓	✓		
02	SP 4	4/2/19	11:30	GW	EN	✓	✓	✓	✓	✓	✓		
03	SP 7	4/2/19	13:00	GW	EN	✓	✓	✓	✓	✓	✓		

Container Type:
Preservative:

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/2/19 13:30	[signature] AAL	4-2-19 1330
[signature]	4-2-19 1755	[signature]	4-2-19 17:55

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1913256
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/05/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913256
Report Date: 04/05/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1913256-01	SP 8	WATER	ONE BROADWAY, EVERETT, MA	04/03/19 08:30	04/03/19
L1913256-02	SP 2	WATER	ONE BROADWAY, EVERETT, MA	04/03/19 09:00	04/03/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1913256

Project Number: 01.0171521.25 **Report Date:** 04/05/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913256
Project Number:	01.0171521.25	**Report Date:**	04/05/19

Case Narrative

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

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

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

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

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913256
Report Date: 04/05/19

Case Narrative (continued)

MCP Related Narratives

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Dissolved Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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: 04/05/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913256
Report Date: 04/05/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1913256
Project Number: 01.0171521.25
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913256-01
Client ID: SP 8
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/03/19 08:30
Date Received: 04/03/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	405		mg/l	0.660	NA	1	04/04/19 14:45	04/04/19 21:58	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 21:58	EPA 3005A	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/04/19 14:45	04/04/19 21:58	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 21:58	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:38	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/04/19 13:27	04/04/19 21:38	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:38	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1913256
Project Number: 01.0171521.25
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913256-02
Client ID: SP 2
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/03/19 09:00
Date Received: 04/03/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	2570		mg/l	0.660	NA	1	04/04/19 14:45	04/04/19 22:03	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 22:03	EPA 3005A	97,6010D	MC
Iron, Total	172		mg/l	0.050	--	1	04/04/19 14:45	04/04/19 22:03	EPA 3005A	97,6010D	MC
Manganese, Total	8.46		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 22:03	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:43	EPA 3005A	97,6010D	MC
Iron, Dissolved	126		mg/l	0.050	--	1	04/04/19 13:27	04/04/19 21:43	EPA 3005A	97,6010D	MC
Manganese, Dissolved	8.20		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:43	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913256
Report Date: 04/05/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1223066-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:01	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/04/19 13:27	04/04/19 21:01	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/04/19 13:27	04/04/19 21:01	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1223093-1										
Copper, Total	ND		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 21:06	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/04/19 14:45	04/04/19 21:06	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/04/19 14:45	04/04/19 21:06	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-02 Batch: WG1223094-1										
Hardness	ND		mg/l	0.660	NA	1	04/04/19 14:45	04/04/19 21:06	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913256

Report Date: 04/05/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1223066-2 WG1223066-3								
Copper, Dissolved	94		95		80-120	1		20
Iron, Dissolved	103		102		80-120	1		20
Manganese, Dissolved	98		96		80-120	2		20
MCP Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1223093-2 WG1223093-3								
Copper, Total	94		95		80-120	1		20
Iron, Total	102		101		80-120	1		20
Manganese, Total	96		96		80-120	0		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 Batch: WG1223094-2 WG1223094-3								
Hardness	103		103		80-120	0		

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913256
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913256-01
Client ID: SP 8
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/03/19 08:30
Date Received: 04/03/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.016		mg/l	0.005	--	1	04/04/19 12:55	04/04/19 15:26	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7000		mg/l	10	--	1	-	04/04/19 08:55	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/04/19 14:45	121,2540D	DR
pH (H)	12.1		SU	-	NA	1	-	04/04/19 02:43	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913256
Report Date: 04/05/19

SAMPLE RESULTS

Lab ID: L1913256-02
Client ID: SP 2
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/03/19 09:00
Date Received: 04/03/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.025		mg/l	0.005	--	1	04/04/19 12:55	04/04/19 15:27	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	9800		mg/l	20	--	2	-	04/04/19 08:55	121,2540C	DW
Solids, Total Suspended	120		mg/l	10	NA	2	-	04/04/19 14:45	121,2540D	DR
pH (H)	6.7		SU	-	NA	1	-	04/04/19 02:43	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1913256
Report Date: 04/05/19

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): 01-02 Batch: WG1222857-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/04/19 08:55	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1223034-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/04/19 14:45	121,2540D	DR
MCP General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1223038-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/04/19 12:55	04/04/19 15:16	97,9014	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913256

Report Date: 04/05/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1222824-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1222857-2								
Solids, Total Dissolved	82		-		80-120	-		
MCP General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1223038-2 WG1223038-3								
Cyanide, Total	95		98		80-120	3		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1913256

Report Date: 04/05/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1223034-2 QC Sample: L1913256-02 Client ID: SP 2						
Solids, Total Suspended	120	120	mg/l	0		29

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1913256
Report Date: 04/05/19

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(*)
L1913256-01A	Plastic 250ml unpreserved	A	12	12	5.0	Y	Absent		PH-9040(1),TDS-2540(7)
L1913256-01B	Plastic 250ml unpreserved	A	12	12	5.0	Y	Absent		-
L1913256-01C	Plastic 250ml NaOH preserved	A	>12	>12	5.0	Y	Absent		MCP-TCN9014-10(14)
L1913256-01D	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1913256-01E	Plastic 950ml unpreserved	A	12	12	5.0	Y	Absent		TSS-2540(7)
L1913256-01X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	5.0	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1913256-02A	Plastic 250ml unpreserved	A	7	7	5.0	Y	Absent		PH-9040(1),TDS-2540(7)
L1913256-02B	Plastic 250ml unpreserved	A	7	7	5.0	Y	Absent		-
L1913256-02C	Plastic 250ml NaOH preserved	A	>12	>12	5.0	Y	Absent		MCP-TCN9014-10(14)
L1913256-02D	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1913256-02E	Plastic 950ml unpreserved	A	7	7	5.0	Y	Absent		TSS-2540(7)
L1913256-02X	Plastic 120ml HNO3 preserved Filtrates	A	N/A	N/A	5.0	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913256
Project Number:	01.0171521.25	**Report Date:**	04/05/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913256
Project Number:	01.0171521.25	**Report Date:**	04/05/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1913256
Project Number:	01.0171521.25	**Report Date:**	04/05/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE ____ OF ____

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 4/3/19

ALPHA Job #: L1913256

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: 781-278-5752
Email: Matthew.smith@gza.com
Daniel.scanlon@gza.com

Additional Project Information:

Project Information

Project Name: Encore Boston Harbor
Project Location: one Broadway Everett MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved)
Date Due: Rush 3 day

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS	SAMPLE INFO	TOTAL # BOTTLES
3256-01	SP 8	4/3/19	8:30	GW	EN	Hardness, ph, total cyanide, total suspended solids (TSS), total and dissolved solids (TDS), total and dissolved copper, total and dissolved manganese, total and dissolved iron	Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	6
02	SP 2	4/3/19	9:00	GW	EN	Hardness, ph, total cyanide, total suspended solids (TSS), total and dissolved solids (TDS), total and dissolved copper, total and dissolved manganese, total and dissolved iron	Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	6

Sample Comments

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Container Type													
Preservative													

Relinquished By:	Date/Time	Received By:	Date/Time
	4/3/19 11:20		4/3/19 1130
	4/3/19 1880		4/3/19 1800

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1914489
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Matthew Smith
Phone:	(781) 278-5830
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/15/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1914489-01	SP 9-1 HR	WATER	ONE BROADWAY, EVERETT, MA	04/10/19 09:30	04/10/19
L1914489-02	SP 8-1 HR	WATER	ONE BROADWAY, EVERETT, MA	04/10/19 10:00	04/10/19
L1914489-03	OUTLET-1 HR	WATER	ONE BROADWAY, EVERETT, MA	04/10/19 11:00	04/10/19
L1914489-04	SP 6-1 HR	WATER	ONE BROADWAY, EVERETT, MA	04/10/19 11:30	04/10/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1914489

Project Number: 01.0171521.25 **Report Date:** 04/15/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914489
Project Number:	01.0171521.25	**Report Date:**	04/15/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914489
Project Number:	01.0171521.25	**Report Date:**	04/15/19

Case Narrative (continued)

MCP Related Narratives

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 04/15/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1914489

Project Number: 01.0171521.25 **Report Date:** 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-01 Date Collected: 04/10/19 09:30

Client ID: SP 9-1 HR Date Received: 04/10/19

Sample Location: ONE BROADWAY, EVERETT, MA Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	180		mg/l	0.660	NA	1	04/11/19 15:22	04/12/19 19:10	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.052		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:21	EPA 3005A	97,6010D	AB
Iron, Total	0.095		mg/l	0.050	--	1	04/11/19 15:22	04/12/19 17:21	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:21	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.049		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:23	EPA 3005A	97,6010D	AB
Iron, Dissolved	0.065		mg/l	0.050	--	1	04/11/19 21:05	04/12/19 16:23	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:23	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1914489

Project Number: 01.0171521.25 **Report Date:** 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-02 Date Collected: 04/10/19 10:00

Client ID: SP 8-1 HR Date Received: 04/10/19

Sample Location: ONE BROADWAY, EVERETT, MA Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1040		mg/l	0.660	NA	1	04/11/19 15:22	04/12/19 19:14	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:26	EPA 3005A	97,6010D	AB
Iron, Total	ND		mg/l	0.050	--	1	04/11/19 15:22	04/12/19 17:26	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:26	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:28	EPA 3005A	97,6010D	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	04/11/19 21:05	04/12/19 16:28	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:28	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1914489

Project Number: 01.0171521.25 **Report Date:** 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-03 Date Collected: 04/10/19 11:00

Client ID: OUTLET-1 HR Date Received: 04/10/19

Sample Location: ONE BROADWAY, EVERETT, MA Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	524		mg/l	0.660	NA	1	04/11/19 15:22	04/12/19 19:19	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.054		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:31	EPA 3005A	97,6010D	AB
Iron, Total	4.04		mg/l	0.050	--	1	04/11/19 15:22	04/12/19 17:31	EPA 3005A	97,6010D	AB
Manganese, Total	0.203		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:31	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.037		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:32	EPA 3005A	97,6010D	AB
Iron, Dissolved	0.051		mg/l	0.050	--	1	04/11/19 21:05	04/12/19 16:32	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:32	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1914489
Project Number: 01.0171521.25
Report Date: 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-04
Client ID: SP 6-1 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/10/19 11:30
Date Received: 04/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	267		mg/l	0.660	NA	1	04/11/19 15:22	04/12/19 19:24	EPA 3005A	1,6010D	AB
MCP Total Metals - Mansfield Lab											
Copper, Total	0.057		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:35	EPA 3005A	97,6010D	AB
Iron, Total	0.072		mg/l	0.050	--	1	04/11/19 15:22	04/12/19 17:35	EPA 3005A	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:35	EPA 3005A	97,6010D	AB
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.053		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:37	EPA 3005A	97,6010D	AB
Iron, Dissolved	0.055		mg/l	0.050	--	1	04/11/19 21:05	04/12/19 16:37	EPA 3005A	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:37	EPA 3005A	97,6010D	AB

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914489
Report Date: 04/15/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1225506-1										
Copper, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:04	97,6010D	AB
Iron, Total	ND		mg/l	0.050	--	1	04/11/19 15:22	04/12/19 17:04	97,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	04/11/19 15:22	04/12/19 17:04	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-04 Batch: WG1225511-1										
Hardness	ND		mg/l	0.660	NA	1	04/11/19 15:22	04/12/19 18:52	1,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1225619-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:10	97,6010D	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	04/11/19 21:05	04/12/19 16:10	97,6010D	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/11/19 21:05	04/12/19 16:10	97,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914489

Report Date: 04/15/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1225506-2 WG1225506-3								
Copper, Total	97		98		80-120	1		20
Iron, Total	101		98		80-120	3		20
Manganese, Total	100		96		80-120	4		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-04 Batch: WG1225511-2								
Hardness	104		-		80-120	-		
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1225619-2 WG1225619-3								
Copper, Dissolved	97		98		80-120	1		20
Iron, Dissolved	107		110		80-120	3		20
Manganese, Dissolved	105		106		80-120	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914489
Report Date: 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-01
Client ID: SP 9-1 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/10/19 09:30
Date Received: 04/10/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.010		mg/l	0.005	--	1	04/11/19 10:40	04/11/19 12:53	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6100		mg/l	10	--	1	-	04/11/19 10:00	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/11/19 15:55	121,2540D	DR
pH (H)	12.2		SU	-	NA	1	-	04/11/19 02:40	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914489
Report Date: 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-02
Client ID: SP 8-1 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/10/19 10:00
Date Received: 04/10/19
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.012		mg/l	0.005	--	1	04/11/19 10:40	04/11/19 12:54	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7800		mg/l	10	--	1	-	04/11/19 10:00	121,2540C	DW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/11/19 15:55	121,2540D	DR
pH (H)	11.9		SU	-	NA	1	-	04/11/19 02:40	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-03
Client ID: OUTLET-1 HR
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 04/10/19 11:00
Date Received: 04/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	--	1	04/11/19 10:40	04/11/19 12:55	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6100		mg/l	10	--	1	-	04/11/19 10:00	121,2540C	DW
Solids, Total Suspended	120		mg/l	10	NA	2	-	04/11/19 15:55	121,2540D	DR
pH (H)	12.0		SU	-	NA	1	-	04/11/19 02:40	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

SAMPLE RESULTS

Lab ID: L1914489-04
Client ID: SP 6-1 HR
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 04/10/19 11:30
Date Received: 04/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.011		mg/l	0.005	--	1	04/11/19 10:40	04/11/19 12:56	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	4900		mg/l	10	--	1	-	04/11/19 10:00	121,2540C	DW
Solids, Total Suspended	14.		mg/l	5.0	NA	1	-	04/11/19 15:55	121,2540D	DR
pH (H)	12.2		SU	-	NA	1	-	04/11/19 02:40	1,9040C	JW

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914489
Report Date: 04/15/19

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): 01-04 Batch: WG1225275-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/11/19 10:00	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1225362-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/11/19 15:55	121,2540D	DR
MCP General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1225377-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/11/19 10:40	04/11/19 12:46	97,9014	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914489

Report Date: 04/15/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1225252-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1225275-2								
Solids, Total Dissolved	95		-		80-120	-		
MCP General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1225377-2 WG1225377-3								
Cyanide, Total	84		96		80-120	13		20

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

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(*)
L1914489-01A	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1914489-01B	Plastic 250ml NaOH preserved	A	>12	>12	4.1	Y	Absent		MCP-TCN9014-10(14)
L1914489-01C	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		-
L1914489-01D	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914489-01E	Plastic 950ml unpreserved	A	12	12	4.1	Y	Absent		TSS-2540(7)
L1914489-01X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914489-02A	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1914489-02B	Plastic 250ml NaOH preserved	A	>12	>12	4.1	Y	Absent		MCP-TCN9014-10(14)
L1914489-02C	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		-
L1914489-02D	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914489-02E	Plastic 950ml unpreserved	A	12	12	4.1	Y	Absent		TSS-2540(7)
L1914489-02X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914489-03A	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1914489-03B	Plastic 250ml NaOH preserved	A	>12	>12	4.1	Y	Absent		MCP-TCN9014-10(14)
L1914489-03C	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		-
L1914489-03D	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914489-03E	Plastic 950ml unpreserved	A	12	12	4.1	Y	Absent		TSS-2540(7)
L1914489-03X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914489-04A	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1914489-04B	Plastic 250ml NaOH preserved	A	>12	>12	4.1	Y	Absent		MCP-TCN9014-10(14)
L1914489-04C	Plastic 250ml unpreserved	A	12	12	4.1	Y	Absent		-

*Values in parentheses indicate holding time in days

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914489
Report Date: 04/15/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1914489-04D	Plastic 250ml HNO3 preserved	A	<2	<2	4.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914489-04E	Plastic 950ml unpreserved	A	12	12	4.1	Y	Absent		TSS-2540(7)
L1914489-04X	Plastic 120ml HNO3 preserved Filtrates	A	NA		4.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914489
Project Number:	01.0171521.25	**Report Date:**	04/15/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914489
Project Number:	01.0171521.25	**Report Date:**	04/15/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914489
Project Number:	01.0171521.25	**Report Date:**	04/15/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE _____ OF _____

Date Rec'd in Lab: 4/10/19

ALPHA Job #: L1914489

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: 781-278-5752
Email: Matthew.Smith@gza.com
Daniel.Scanlon@gza.com

Additional Project Information:

Project Information

Project Name: Encore Boston Harbor
Project Location: One Broadway Everett MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!)
Date Due: Rush 3 day

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Hardness, ph, total cyanide	total suspended solids (TSS)	total dissolved solids (TDS)	total and dissolved copper	total and dissolved manganese	total and dissolved iron	Sample Comments	TOTAL # BOTTLES
14489-01	SP 9 - 1 hr	4/10/19	9:30	GW	EN								✓	✓	✓	✓	✓	✓			
02	SP 8 - 1 hr	4/10/19	10:00	GW	EN								✓	✓	✓	✓	✓	✓			
03	Outlet - 1 hr	4/10/19	11:00	GW	EN								✓	✓	✓	✓	✓	✓			
04	SP 6 - 1 hr	4/10/19	11:30	GW	EN								✓	✓	✓	✓	✓	✓			

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

Container Type																					
Preservative																					

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/10/19 15:45	[signature] AMAL	4/10/19 1345
[signature]	4/10/19 1815	[signature]	4/10/19 18:15

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1914703
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/16/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1914703-01	SP 9 - 24 HR	WATER	ONE BROADWAY, EVERETT, MA	04/11/19 09:00	04/11/19
L1914703-02	SP 8 - 24 HR	WATER	ONE BROADWAY, EVERETT, MA	04/11/19 09:30	04/11/19
L1914703-03	OUTLET - 24 HR	WATER	ONE BROADWAY, EVERETT, MA	04/11/19 10:00	04/11/19
L1914703-04	SP 6 - 24 HR	WATER	ONE BROADWAY, EVERETT, MA	04/11/19 11:15	04/11/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1914703

Project Number: 01.0171521.25 **Report Date:** 04/16/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	NO
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914703
Project Number:	01.0171521.25	**Report Date:**	04/16/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914703
Project Number:	01.0171521.25	**Report Date:**	04/16/19

Case Narrative (continued)

MCP Related Narratives

Total Metals

In reference to question H:

The WG1226013-3 MS recovery for Hardness (48%), performed on L1914703-01, does not apply because the sample concentration is greater than four times the spike amount added.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Dissolved Metals

In reference to question A:

L1914703-01 through -04: The sample was received at the laboratory requiring filtration for Dissolved Metals; the sample was filtered beyond the required 24 hour holding time required for filtration. The sample was filtered and preserved appropriately, with the client's authorization.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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:  Amita Naik

Title: Technical Director/Representative Date: 04/16/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
Total Hardness by SM 2340B - Mansfield Lab								
6010D	Batch QC (L1914703-01)	WG1226013-3	Hardness	MS	48	75-125	01-04	potential low bias

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1914703
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-01
Client ID: SP 9 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/11/19 09:00
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	811		mg/l	0.660	NA	1	04/12/19 19:00	04/15/19 19:06	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.033		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:06	EPA 3005A	97,6010D	MC
Iron, Total	0.064		mg/l	0.050	--	1	04/12/19 19:00	04/15/19 19:06	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:06	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.030		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:04	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/13/19 11:45	04/15/19 20:04	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:04	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1914703
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-02
Client ID: SP 8 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/11/19 09:30
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1240		mg/l	0.660	NA	1	04/12/19 19:00	04/15/19 19:25	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:25	EPA 3005A	97,6010D	MC
Iron, Total	0.058		mg/l	0.050	--	1	04/12/19 19:00	04/15/19 19:25	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:25	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:09	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/13/19 11:45	04/15/19 20:09	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:09	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1914703
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-03
Client ID: OUTLET - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/11/19 10:00
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	990		mg/l	0.660	NA	1	04/12/19 19:00	04/15/19 19:31	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.036		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:31	EPA 3005A	97,6010D	MC
Iron, Total	0.778		mg/l	0.050	--	1	04/12/19 19:00	04/15/19 19:31	EPA 3005A	97,6010D	MC
Manganese, Total	0.035		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:31	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.029		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:14	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/13/19 11:45	04/15/19 20:14	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:14	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1914703
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-04
Client ID: SP 6 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/11/19 11:15
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1300		mg/l	0.660	NA	1	04/12/19 19:00	04/15/19 19:59	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.026		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:59	EPA 3005A	97,6010D	MC
Iron, Total	0.076		mg/l	0.050	--	1	04/12/19 19:00	04/15/19 19:59	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 19:59	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.024		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:19	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/13/19 11:45	04/15/19 20:19	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 20:19	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914703
Report Date: 04/16/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1225997-1										
Copper, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 23:10	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/12/19 19:00	04/15/19 23:10	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/12/19 19:00	04/15/19 23:10	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-04 Batch: WG1226013-1										
Hardness	ND		mg/l	0.660	NA	1	04/12/19 19:00	04/15/19 18:22	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1226162-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 18:47	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/13/19 11:45	04/15/19 18:47	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/13/19 11:45	04/15/19 18:47	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914703

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1225997-2								
Copper, Total	102		-		80-120	-		20
Iron, Total	108		-		80-120	-		20
Manganese, Total	100		-		80-120	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-04 Batch: WG1226013-2								
Hardness	103		-		80-120	-		
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1226162-2 WG1226162-3								
Copper, Dissolved	100		100		80-120	0		20
Iron, Dissolved	110		112		80-120	2		20
Manganese, Dissolved	100		102		80-120	2		20

Matrix Spike Analysis
Batch Quality Control

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1226013-3 QC Sample: L1914703-01 Client ID: SP 9 - 24 HR												
Hardness	811	66.2	843	**48**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914703

Report Date: 04/16/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1226013-4 QC Sample: L1914703-01 Client ID: SP 9 - 24 HR						
Hardness	811	786	mg/l	3		20

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914703
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-01
Client ID: SP 9 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/11/19 09:00
Date Received: 04/11/19
Field Prep: Refer to COC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.021		mg/l	0.005	--	1	04/12/19 10:45	04/12/19 13:07	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6600		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.1		SU	-	NA	1	-	04/12/19 10:47	1,9040C	GD

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-02
Client ID: SP 8 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 04/11/19 09:30
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.013		mg/l	0.005	--	1	04/12/19 10:45	04/12/19 13:08	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7700		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	8.6		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH	11.9	(H)	SU	-	NA	1	-	04/12/19 10:47	1,9040C	GD

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-03
Client ID: OUTLET - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA

Date Collected: 04/11/19 10:00
Date Received: 04/11/19
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.012		mg/l	0.005	--	1	04/12/19 10:45	04/12/19 13:11	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6800		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	43.		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.0		SU	-	NA	1	-	04/12/19 10:47	1,9040C	GD

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914703
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1914703-04
Client ID: SP 6 - 24 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/11/19 11:15
Date Received: 04/11/19
Field Prep: Refer to COC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.008		mg/l	0.005	--	1	04/12/19 10:45	04/12/19 13:12	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	6600		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	40.		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.0		SU	-	NA	1	-	04/12/19 10:47	1,9040C	GD

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1914703
Report Date: 04/16/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1225795-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/12/19 10:45	04/12/19 13:01	97,9014	LH
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1226228-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/14/19 02:30	121,2540C	CW
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1226400-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914703

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1225795-2 WG1225795-3								
Cyanide, Total	92		90		80-120	2		20
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1225847-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1226228-2								
Solids, Total Dissolved	86		-		80-120	-		

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1914703

Report Date: 04/16/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1225847-2 QC Sample: L1914703-01 Client ID: SP 9 - 24 HR						
pH (H)	12.1	12.1	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1226228-3 QC Sample: L1914703-01 Client ID: SP 9 - 24 HR						
Solids, Total Dissolved	6600	6800	mg/l	3		10

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

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(*)
L1914703-01A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1914703-01B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1914703-01C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914703-01D	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1914703-01E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1914703-01W	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914703-02A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1914703-02B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1914703-02C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914703-02D	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1914703-02E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1914703-02W	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914703-03A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1914703-03B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1914703-03C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1914703-03D	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1914703-03E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1914703-03W	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1914703-04A	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		-
L1914703-04B	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		PH-9040(1),TDS-2540(7)
L1914703-04C	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)

*Values in parentheses indicate holding time in days

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1914703
Report Date: 04/16/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1914703-04D	Plastic 250ml NaOH preserved	A	>12	>12	2.4	Y	Absent		MCP-TCN9014-10(14)
L1914703-04E	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540(7)
L1914703-04W	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.4	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914703
Project Number:	01.0171521.25	**Report Date:**	04/16/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914703
Project Number:	01.0171521.25	**Report Date:**	04/16/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1914703
Project Number:	01.0171521.25	**Report Date:**	04/16/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE ____ OF ____

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 4/11/19 18:05

ALPHA Job #: L1914703

Project Information

Project Name: Encore Boston Harbor

Project Location: One Broadway Everett MA

Project #: 01.0171521.25

Project Manager: Matthew Smith

ALPHA Quote #:

Client Information

Client: GZA

Address: 249 Vanderbilt Ave Norwood, MA

Phone: 781-278-5752

Email: Matthew.smith@gza.com Daniel.scanlon@gza.com

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved)

Date Due: Rush 3 Day

Additional Project Information:

- Dissolved metals were field filtered

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS (MCP)	METALS (RCRA)	EPH	VPH	PCB/PEST	TPH	Hardness, pH, total cyanide	total suspended solids (TSS)	total dissolved solids (TDS)	total and dissolved copper	total and dissolved manganese	total and dissolved iron	Sample Comments	TOTAL # BOTTLES
14703-01	SP 9 - 24 hr	4/11/19	9:00	GW	EN									✓	✓	✓	✓	✓	✓		
-02	SP 8 - 24 hr	4/11/19	9:30	GW	EN									✓	✓	✓	✓	✓	✓		
-03	outlet - 24 hr	4/11/19	10:00	GW	EN									✓	✓	✓	✓	✓	✓		
-04	SP 6 - 24 hr	4/11/19	11:15	GW	EN									✓	✓	✓	✓	✓	✓		

Container Type:

Preservative:

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Eric [signature]	4/11/19/12:25	TK [signature] AAL	4-11-19 12:25
TK [signature]	4/11/19 18:05	[signature]	4/11/19 18:05

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1915046
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Daniel Scanlon
Phone:	(781) 278-3700
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	04/16/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1915046
Report Date: 04/16/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1915046-01	SP 9 - 48 HR	WATER	ONE BROADWAY, EVERETT, MA	04/12/19 08:30	04/12/19
L1915046-02	SP 8 - 48 HR	WATER	ONE BROADWAY, EVERETT, MA	04/12/19 09:00	04/12/19
L1915046-03	OUTLET - 48 HR	WATER	ONE BROADWAY, EVERETT, MA	04/12/19 09:30	04/12/19
L1915046-04	SP 6- 48 HR	WATER	ONE BROADWAY, EVERETT, MA	04/12/19 10:30	04/12/19

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1915046

Project Number: 01.0171521.25 **Report Date:** 04/16/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1915046
Project Number:	01.0171521.25	**Report Date:**	04/16/19

Case Narrative

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

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

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

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

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

Case Narrative (continued)

MCP Related Narratives

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Dissolved Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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: 04/16/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1915046
Report Date: 04/16/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1915046
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-01
Client ID: SP 9 - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/12/19 08:30
Date Received: 04/12/19
Field Prep: None

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1100		mg/l	0.660	NA	1	04/15/19 11:10	04/15/19 19:31	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.021		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:31	EPA 3005A	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/15/19 11:10	04/15/19 19:31	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:31	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.021		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:52	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/15/19 12:57	04/15/19 17:52	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:52	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1915046
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-02
Client ID: SP 8 - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/12/19 09:00
Date Received: 04/12/19
Field Prep: None

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1500		mg/l	6.60	NA	10	04/15/19 11:10	04/16/19 03:30	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:35	EPA 3005A	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/15/19 11:10	04/15/19 19:35	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:35	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:57	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/15/19 12:57	04/15/19 17:57	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:57	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1915046
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-03
Client ID: OUTLET - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/12/19 09:30
Date Received: 04/12/19
Field Prep: None

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1350		mg/l	6.60	NA	10	04/15/19 11:10	04/16/19 03:34	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.027		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:40	EPA 3005A	97,6010D	MC
Iron, Total	0.249		mg/l	0.050	--	1	04/15/19 11:10	04/15/19 19:40	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:40	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.023		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 18:02	EPA 3005A	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/15/19 12:57	04/15/19 18:02	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 18:02	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1915046
Project Number: 01.0171521.25
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-04
Client ID: SP 6- 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 04/12/19 10:30
Date Received: 04/12/19
Field Prep: None

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	1650		mg/l	6.60	NA	10	04/15/19 11:10	04/16/19 03:38	EPA 3005A	1,6010D	MC
MCP Total Metals - Mansfield Lab											
Copper, Total	0.020		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:58	EPA 3005A	97,6010D	MC
Iron, Total	0.056		mg/l	0.050	--	1	04/15/19 11:10	04/15/19 19:58	EPA 3005A	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:58	EPA 3005A	97,6010D	MC
MCP Dissolved Metals - Mansfield Lab											
Copper, Dissolved	0.019		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 18:07	EPA 3005A	97,6010D	MC
Iron, Dissolved	0.059		mg/l	0.050	--	1	04/15/19 12:57	04/15/19 18:07	EPA 3005A	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 18:07	EPA 3005A	97,6010D	MC

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1226442-1										
Copper, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:05	97,6010D	MC
Iron, Total	ND		mg/l	0.050	--	1	04/15/19 11:10	04/15/19 19:05	97,6010D	MC
Manganese, Total	ND		mg/l	0.010	--	1	04/15/19 11:10	04/15/19 19:05	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-04 Batch: WG1226444-1										
Hardness	ND		mg/l	0.660	NA	1	04/15/19 11:10	04/15/19 19:05	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Mansfield Lab for sample(s): 01-04 Batch: WG1226475-1										
Copper, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:38	97,6010D	MC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/15/19 12:57	04/15/19 17:38	97,6010D	MC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/15/19 12:57	04/15/19 17:38	97,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1915046

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1226442-2 WG1226442-3								
Copper, Total	91		92		80-120	1		20
Iron, Total	101		101		80-120	0		20
Manganese, Total	92		91		80-120	1		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-04 Batch: WG1226444-2								
Hardness	100		-		80-120	-		
MCP Dissolved Metals - Mansfield Lab Associated sample(s): 01-04 Batch: WG1226475-2 WG1226475-3								
Copper, Dissolved	98		100		80-120	2		20
Iron, Dissolved	112		113		80-120	1		20
Manganese, Dissolved	101		102		80-120	1		20

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-01
Client ID: SP 9 - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/12/19 08:30
Date Received: 04/12/19
Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.025		mg/l	0.005	--	1	04/14/19 18:35	04/15/19 11:16	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7000		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	7.7		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.2		SU	-	NA	1	-	04/12/19 22:50	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-02
Client ID: SP 8 - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/12/19 09:00
Date Received: 04/12/19
Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.015		mg/l	0.005	--	1	04/14/19 18:35	04/15/19 11:17	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7900		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	15.		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH	11.9	(H)	SU	-	NA	1	-	04/12/19 22:50	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-03
Client ID: OUTLET - 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/12/19 09:30
Date Received: 04/12/19
Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.021		mg/l	0.005	--	1	04/14/19 18:35	04/15/19 11:18	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7300		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	12.		mg/l	5.5	NA	1.1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.1		SU	-	NA	1	-	04/12/19 22:50	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

SAMPLE RESULTS

Lab ID: L1915046-04
Client ID: SP 6- 48 HR
Sample Location: ONE BROADWAY, EVERETT, MA
Sample Depth:
Matrix: Water

Date Collected: 04/12/19 10:30
Date Received: 04/12/19
Field Prep: None

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.014		mg/l	0.005	--	1	04/14/19 18:35	04/15/19 11:21	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Dissolved	7300		mg/l	20	--	2	-	04/14/19 02:30	121,2540C	CW
Solids, Total Suspended	96.		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR
pH (H)	12.0		SU	-	NA	1	-	04/12/19 22:50	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1915046
Report Date: 04/16/19

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): 01-04 Batch: WG1226228-1										
Solids, Total Dissolved	ND		mg/l	10	--	1	-	04/14/19 02:30	121,2540C	CW
MCP General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1226305-1										
Cyanide, Total	ND		mg/l	0.005	--	1	04/14/19 18:35	04/15/19 10:59	97,9014	LH
General Chemistry - Westborough Lab for sample(s): 01-04 Batch: WG1226400-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/15/19 11:15	121,2540D	DR

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1915046

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1226042-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1226228-2								
Solids, Total Dissolved	86		-		80-120	-		
MCP General Chemistry - Westborough Lab Associated sample(s): 01-04 Batch: WG1226305-2 WG1226305-3								
Cyanide, Total	86		89		80-120	3		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1915046

Report Date: 04/16/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1226042-2 QC Sample: L1915046-01 Client ID: SP 9 - 48 HR						
pH (H)	12.2	12.2	SU	0		5

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1915046
Report Date: 04/16/19

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(*)
L1915046-01A	Plastic 250ml HNO3 preserved	A	<2	<2	2.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1915046-01B	Plastic 950ml unpreserved	A	11	11	2.1	Y	Absent		TSS-2540(7)
L1915046-01C	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1915046-01D	Plastic 250ml NaOH preserved	A	>12	>12	2.1	Y	Absent		MCP-TCN9014-10(14)
L1915046-01E	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		-
L1915046-01X	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1915046-02A	Plastic 250ml HNO3 preserved	A	<2	<2	2.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1915046-02B	Plastic 950ml unpreserved	A	11	11	2.1	Y	Absent		TSS-2540(7)
L1915046-02C	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1915046-02D	Plastic 250ml NaOH preserved	A	>12	>12	2.1	Y	Absent		MCP-TCN9014-10(14)
L1915046-02E	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		-
L1915046-02X	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1915046-03A	Plastic 250ml HNO3 preserved	A	<2	<2	2.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1915046-03B	Plastic 950ml unpreserved	A	11	11	2.1	Y	Absent		TSS-2540(7)
L1915046-03C	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		PH-9040(1),TDS-2540(7)
L1915046-03D	Plastic 250ml NaOH preserved	A	>12	>12	2.1	Y	Absent		MCP-TCN9014-10(14)
L1915046-03E	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		-
L1915046-03X	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)
L1915046-04A	Plastic 250ml HNO3 preserved	A	<2	<2	2.1	Y	Absent		MCP-FE-6010T-10(180),MCP-MN-6010T-10(180),MCP-CU-6010T-10(180),HARDT(180)
L1915046-04B	Plastic 950ml unpreserved	A	11	11	2.1	Y	Absent		TSS-2540(7)
L1915046-04C	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		PH-9040(1),TDS-2540(7)

*Values in parentheses indicate holding time in days

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1915046
Report Date: 04/16/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1915046-04D	Plastic 250ml NaOH preserved	A	>12	>12	2.1	Y	Absent		MCP-TCN9014-10(14)
L1915046-04E	Plastic 250ml unpreserved	A	11	11	2.1	Y	Absent		-
L1915046-04X	Plastic 120ml HNO3 preserved Filtrates	A	NA		2.1	Y	Absent		MCP-FE-6010S-10(180),MCP-MN-6010S-10(180),MCP-CU-6010S-10(180)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1915046
Project Number:	01.0171521.25	**Report Date:**	04/16/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1915046
Project Number:	01.0171521.25	**Report Date:**	04/16/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1915046
Project Number:	01.0171521.25	**Report Date:**	04/16/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 4/12/19

ALPHA Job #: L1915046

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: 781-278-5752
Email: Matthew.Smith@gza.com
Daniel.Scanlon@gza.com

Project Information

Project Name: Encore Boston Harbor
Project Location: One Broadway Everett MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!)
Date Due: Rush 3 Day

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

Additional Project Information:

- Dissolved metals were field filtered

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Hardness, ph, total cyanide
total suspended solids (TSS)
total and dissolved solids (TDS)
total and dissolved copper
total and dissolved manganese
total and dissolved iron

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Hardness	ph	total cyanide	total suspended solids (TSS)	total and dissolved solids (TDS)	total and dissolved copper	total and dissolved iron	Sample Comments	TOTAL # BOTTLES
1915046-01	SP 9 - 48 hr	4/12/19	8:30	GW	EN	✓	✓	✓	✓	✓	✓			
02	SP 8 - 48 hr	4/12/19	9:00	GW	EN	✓	✓	✓	✓	✓	✓			
03	outlet - 48 hr	4/12/19	9:30	GW	EN	✓	✓	✓	✓	✓	✓			
04	SP 6 - 48 hr	4/12/19	10:30	GW	EN	✓	✓	✓	✓	✓	✓			

Container Type														
Preservative														

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	4/12/19 13:00	AAL	4/12/19 13:00
AAL	4/12/19 18:09	AAL	4/12/19 1:50

All samples submitted are subject to Alpha's Terms and Conditions.
See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1920874
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave Norwood, MA 02062
ATTN:	Matthew Smith
Phone:	(781) 278-5830
Project Name:	ENCORE BOSTON HARBOR
Project Number:	01.0171521.25
Report Date:	05/23/19

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

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

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1920874
Report Date: 05/23/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1920874-01	SP-6/8/9 COC ANALYSIS	WATER	ONE BROADWAY, EVERETT, MA	05/17/19 12:45	05/17/19

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

Case Narrative

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

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

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

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

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

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

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

Case Narrative (continued)

Report Submission

May 23, 2019: This final report includes the results of all requested analyses.

May 20, 2019: This is a preliminary report.

The analysis of Fluorine was subcontracted. A copy of the laboratory report is included as an addendum.

Please note: This data is only available in PDF format and is not available on Data Merger.

MCP Related Narratives

Volatile Organics

A copy of the continuing calibration standard is included as an addendum to this report.

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Volatile Organics by SIM

A copy of the continuing calibration standard is included as an addendum to this report.

In reference to question H:

The initial calibration, associated with L1920874-01, did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0031), as well as the average response factor for 1,4-dioxane.

Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

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: 05/23/19

QC OUTLIER SUMMARY REPORT

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1920874
Report Date: 05/23/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

ORGANICS

VOLATILES

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1920874
Project Number: 01.0171521.25
Report Date: 05/23/19

SAMPLE RESULTS

Lab ID: L1920874-01
Client ID: SP-6/8/9 COC ANALYSIS
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 05/17/19 12:45
Date Received: 05/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 05/20/19 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2-Dichloroethane	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1920874
Project Number: 01.0171521.25
Report Date: 05/23/19

SAMPLE RESULTS

Lab ID: L1920874-01
Client ID: SP-6/8/9 COC ANALYSIS
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 05/17/19 12:45
Date Received: 05/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C-SIM
Analytical Date: 05/20/19 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1920874
Report Date: 05/23/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 05/20/19 07:23
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1238966-5					
1,2-Dichloroethane	ND		ug/l	1.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	99		70-130

Project Name: ENCORE BOSTON HARBOR **Lab Number:** L1920874

Project Number: 01.0171521.25 **Report Date:** 05/23/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C-SIM
Analytical Date: 05/20/19 07:23
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1238969-5					
1,4-Dioxane	ND		ug/l	3.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1920874

Report Date: 05/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1238966-3 WG1238966-4								
1,2-Dichloroethane	110		110		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		99		70-130
Toluene-d8	93		94		70-130
4-Bromofluorobenzene	94		92		70-130
Dibromofluoromethane	101		101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1920874

Report Date: 05/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1238969-3 WG1238969-4								
1,4-Dioxane	120		130		70-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130

METALS

Project Name: ENCORE BOSTON HARBOR
Lab Number: L1920874
Project Number: 01.0171521.25
Report Date: 05/23/19

SAMPLE RESULTS

Lab ID: L1920874-01
Client ID: SP-6/8/9 COC ANALYSIS
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 05/17/19 12:45
Date Received: 05/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	558		mg/l	13.2	NA	20	05/18/19 14:07	05/20/19 11:07	EPA 3005A	1,6010D	LC
MCP Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.0050	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Cadmium, Total	ND		mg/l	0.004	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Chromium, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Copper, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Iron, Total	ND		mg/l	0.050	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Lead, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Nickel, Total	ND		mg/l	0.025	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC
Zinc, Total	ND		mg/l	0.050	--	1	05/18/19 14:07	05/20/19 10:08	EPA 3005A	97,6010D	LC

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1920874
Report Date: 05/23/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1238682-1										
Hardness	ND		mg/l	0.660	NA	1	05/18/19 14:07	05/20/19 09:36	1,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1238683-1										
Arsenic, Total	ND		mg/l	0.0050	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Cadmium, Total	ND		mg/l	0.004	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Chromium, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Copper, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Iron, Total	ND		mg/l	0.050	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Lead, Total	ND		mg/l	0.010	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Nickel, Total	ND		mg/l	0.025	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC
Zinc, Total	ND		mg/l	0.050	--	1	05/18/19 14:07	05/20/19 09:36	97,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1920874

Report Date: 05/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1238682-2								
Hardness	111		-		80-120	-		
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1238683-2 WG1238683-3								
Arsenic, Total	105		107		80-120	2		20
Cadmium, Total	105		109		80-120	4		20
Chromium, Total	98		102		80-120	4		20
Copper, Total	92		96		80-120	4		20
Iron, Total	109		113		80-120	4		20
Lead, Total	103		104		80-120	1		20
Nickel, Total	92		96		80-120	4		20
Zinc, Total	105		109		80-120	4		20

INORGANICS
&
MISCELLANEOUS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1920874
Report Date: 05/23/19

SAMPLE RESULTS

Lab ID: L1920874-01
Client ID: SP-6/8/9 COC ANALYSIS
Sample Location: ONE BROADWAY, EVERETT, MA
Date Collected: 05/17/19 12:45
Date Received: 05/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Cyanide, Total	0.016		mg/l	0.005	--	1	05/19/19 12:55	05/20/19 11:14	97,9014	LH
General Chemistry - Westborough Lab										
Solids, Total Suspended	26.		mg/l	5.0	NA	1	-	05/18/19 12:05	121,2540D	JT
pH (H)	11.6		SU	-	NA	1	-	05/17/19 22:56	1,9040C	AS

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25
Lab Number: L1920874
Report Date: 05/23/19

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: WG1238581-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/18/19 12:05	121,2540D	JT
MCP General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1238814-1										
Cyanide, Total	ND		mg/l	0.005	--	1	05/19/19 12:55	05/20/19 10:51	97,9014	LH

Lab Control Sample Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1920874

Report Date: 05/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1238533-1								
pH	101		-		99-101	-		5
MCP General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1238814-2 WG1238814-3								
Cyanide, Total	86		93		80-120	8		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: ENCORE BOSTON HARBOR

Project Number: 01.0171521.25

Lab Number: L1920874

Report Date: 05/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1238533-2 QC Sample: L1920874-01 Client ID: SP-6/8/9 COC ANALYSIS						
pH (H)	11.6	11.5	SU	1		5

Project Name: ENCORE BOSTON HARBOR
Project Number: 01.0171521.25

Lab Number: L1920874
Report Date: 05/23/19

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(*)
L1920874-01A	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01B	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01C	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01D	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01E	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01F	Vial HCl preserved	A	NA		3.0	Y	Absent		MCP-8260SIM-10(14),MCP-8260-10(14)
L1920874-01G	Plastic 250ml HNO3 preserved	A	<2	<2	3.0	Y	Absent		MCP-CR-6010T-10(180),MCP-FE-6010T-10(180),MCP-AS-6010T-10(180),MCP-CD-6010T-10(180),MCP-CU-6010T-10(180),MCP-ZN-6010T-10(180),HARDT(180),MCP-NI-6010T-10(180),MCP-PB-6010T-10(180)
L1920874-01H	Plastic 250ml NaOH preserved	A	>12	>12	3.0	Y	Absent		MCP-TCN9014-10(14)
L1920874-01I	Amber 1000ml unpreserved	A	11	11	3.0	Y	Absent		TSS-2540(7)
L1920874-01J	Amber 1000ml unpreserved	A	11	11	3.0	Y	Absent		PH-9040(1)
L1920874-01K	Amber 1000ml unpreserved	A	11	11	3.0	Y	Absent		SUB-FLUORINE(28)
L1920874-01L	Plastic 500ml unpreserved	A	11	11	3.0	Y	Absent		PH-9040(1)

*Values in parentheses indicate holding time in days

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

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.

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

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 projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less 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.

Report Format: Data Usability Report

Project Name:	ENCORE BOSTON HARBOR	**Lab Number:**	L1920874
Project Number:	01.0171521.25	**Report Date:**	05/23/19

REFERENCES

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

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

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 624/624.1: 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 6860: SCM: Perchlorate

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

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-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: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 5/17/19

ALPHA Job #: L1920874

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: GZA
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: 781-278-5752
Email: Matthew.smith@gza.com
Daniel.Scanlon@gza.com
Additional Project Information:

Project Information

Project Name: Encore Boston Harbor
Project Location: One Broadway Everett, MA
Project #: 01.0171521.25
Project Manager: Matthew Smith
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved!)
Date Due: 24-hr

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program ____ Criteria ____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	1,4 Dioxane 8260	Cyanide	Total arsenic, total cadmium, total chromium, total lead, total copper, total zinc, total nickel, total iron, hardness	Flashpoint, pH, TSS	Sample Comments	TOTAL # BOTTLES
20874-01	SP-6/8/19 COC Analysis	5/17/19	12:45	GW	EN									X	X	X	X	X	
Container Type														V	P	P	P	A/P	
Preservative														B	E	C	C	A	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	5/17/19 15:16	AAL	5/17/19 1515
	5/17/19 1852		5/17/19 1852

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Method Blank Summary
Form 4
Volatiles

Client	: GZA GeoEnvironmental, Inc.	**Lab Number**	: L1920874
Project Name	: ENCORE BOSTON HARBOR	**Project Number**	: 01.0171521.25
Lab Sample ID	: WG1238966-5	**Lab File ID**	: VJ190520A14
Instrument ID	: JACK		
Matrix	: WATER	**Analysis Date**	: 05/20/19 07:23

Client Sample No.	Lab Sample ID	Analysis Date
WG1238966-3LCS	WG1238966-3	05/20/19 03:58
WG1238966-4LCSD	WG1238966-4	05/20/19 04:32
SP-6/8/9 COC ANALYSIS	L1920874-01	05/20/19 08:30

Calibration Verification Summary
Form 7
Volatiles

Client	: GZA GeoEnvironmental, Inc.	**Lab Number**	: L1920874		
Project Name	: ENCORE BOSTON HARBOR	**Project Number**	: 01.0171521.25		
Instrument ID	: JACK	**Calibration Date**	: 05/20/19 03:58		
Lab File ID	: VJ190520A02	**Init. Calib. Date(s)**	: 04/30/19	04/30/19	
Sample No	: WG1238966-2	**Init. Calib. Times**	: 10:10	14:03	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	113	0
Dichlorodifluoromethane	0.37	0.322	-	13	20	99	0
Chloromethane	0.46	0.406	-	11.7	20	98	.01
Vinyl chloride	0.415	0.455	-	-9.6	20	113	0
Bromomethane	0.286	0.261	-	8.7	20	102	0
Chloroethane	10	10.478	-	-4.8	20	120	0
Trichlorofluoromethane	0.571	0.608	-	-6.5	20	115	0
Ethyl ether	0.176	0.205	-	-16.5	20	131	0
1,1-Dichloroethene	0.35	0.37	-	-5.7	20	113	0
Carbon disulfide	0.97	1.029	-	-6.1	20	115	0
Methylene chloride	0.358	0.388	-	-8.4	20	119	0
Acetone	10	11.588	-	-15.9	20	128	0
trans-1,2-Dichloroethene	0.369	0.38	-	-3	20	115	0
Methyl tert-butyl ether	0.787	0.91	-	-15.6	20	129	0
Diisopropyl ether	1.329	1.353	-	-1.8	20	114	0
1,1-Dichloroethane	0.696	0.694	-	0.3	20	111	0
Ethyl tert-butyl ether	1.08	1.188	-	-10	20	126	0
cis-1,2-Dichloroethene	0.405	0.427	-	-5.4	20	118	0
2,2-Dichloropropane	0.598	0.585	-	2.2	20	108	0
Bromochloromethane	0.178	0.208	-	-16.9	20	136	0
Chloroform	0.65	0.684	-	-5.2	20	119	0
Carbon tetrachloride	0.532	0.542	-	-1.9	20	116	0
Tetrahydrofuran	0.088	0.11	-	-25*	20	132	0
Dibromofluoromethane	0.228	0.23	-	-0.9	20	114	0
1,1,1-Trichloroethane	0.602	0.631	-	-4.8	20	118	0
2-Butanone	0.119	0.14	-	-17.6	20	132	0
1,1-Dichloropropene	0.642	0.654	-	-1.9	20	122	0
Benzene	1.635	1.696	-	-3.7	20	120	0
tert-Amyl methyl ether	0.949	1.07	-	-12.8	20	129	0
1,2-Dichloroethane-d4	0.262	0.261	-	0.4	20	115	0
1,2-Dichloroethane	0.455	0.494	-	-8.6	20	123	0
Trichloroethene	0.406	0.43	-	-5.9	20	123	0
Dibromomethane	0.188	0.209	-	-11.2	20	128	0
1,2-Dichloropropane	0.397	0.396	-	0.3	20	113	0
Bromodichloromethane	0.501	0.522	-	-4.2	20	119	0
1,4-Dioxane	0.00279	0.00329*	-	-17.9	20	132	0
cis-1,3-Dichloropropene	0.658	0.654	-	0.6	20	122	0
Chlorobenzene-d5	1	1	-	0	20	127	0
Toluene-d8	1.335	1.24	-	7.1	20	118	0
Toluene	1.323	1.322	-	0.1	20	129	0
4-Methyl-2-pentanone	0.124	0.129	-	-4	20	136	0
Tetrachloroethene	0.548	0.543	-	0.9	20	125	0
trans-1,3-Dichloropropene	0.677	0.626	-	7.5	20	124	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: GZA GeoEnvironmental, Inc.		**Lab Number**	: L1920874	
Project Name	: ENCORE BOSTON HARBOR		**Project Number**	: 01.0171521.25	
Instrument ID	: JACK		**Calibration Date**	: 05/20/19 03:58	
Lab File ID	: VJ190520A02		**Init. Calib. Date(s)**	: 04/30/19	04/30/19
Sample No	: WG1238966-2		**Init. Calib. Times**	: 10:10	14:03
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,1,2-Trichloroethane	0.297	0.3	-	-1	20	131	0
Chlorodibromomethane	0.439	0.427	-	2.7	20	128	0
1,3-Dichloropropane	0.631	0.617	-	2.2	20	126	0
1,2-Dibromoethane	0.35	0.366	-	-4.6	20	137	0
2-Hexanone	0.228	0.244	-	-7	20	133	0
Chlorobenzene	1.436	1.448	-	-0.8	20	131	0
Ethylbenzene	2.459	2.45	-	0.4	20	130	0
1,1,1,2-Tetrachloroethane	0.502	0.494	-	1.6	20	129	0
p/m Xylene	20	18.805	-	6	20	134	0
o Xylene	0.877	0.863	-	1.6	20	135	0
Styrene	1.399	1.412	-	-0.9	20	139	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	144	0
Bromoform	0.556	0.572	-	-2.9	20	139	0
Isopropylbenzene	5.344	5.03	-	5.9	20	141	0
4-Bromofluorobenzene	1.063	0.995	-	6.4	20	134	0
Bromobenzene	10	10.774	-	-7.7	20	138	0
n-Propylbenzene	5.22	5.073	-	2.8	20	144	0
1,1,2,2-Tetrachloroethane	10	10.128	-	-1.3	20	138	0
2-Chlorotoluene	3.82	3.674	-	3.8	20	141	0
1,3,5-Trimethylbenzene	3.592	3.628	-	-1	20	147	0
1,2,3-Trichloropropane	10	11.437	-	-14.4	20	147	0
4-Chlorotoluene	3.252	3.098	-	4.7	20	143	0
tert-Butylbenzene	3.062	3.073	-	-0.4	20	153	0
1,2,4-Trimethylbenzene	3.298	3.342	-	-1.3	20	150	0
sec-Butylbenzene	4.261	4.059	-	4.7	20	145	0
p-Isopropyltoluene	3.437	3.528	-	-2.6	20	157	0
1,3-Dichlorobenzene	2.169	2.121	-	2.2	20	148	0
1,4-Dichlorobenzene	2.058	2.002	-	2.7	20	148	0
n-Butylbenzene	2.563	2.723	-	-6.2	20	158	0
1,2-Dichlorobenzene	1.984	1.912	-	3.6	20	145	0
1,2-Dibromo-3-chloropropan	0.141	0.148	-	-5	20	134	0
Hexachlorobutadiene	0.32	0.318	-	0.6	20	141	0
1,2,4-Trichlorobenzene	0.79	0.794	-	-0.5	20	145	0
Naphthalene	1.79	1.891	-	-5.6	20	147	0
1,2,3-Trichlorobenzene	0.678	0.694	-	-2.4	20	146	0

* Value outside of QC limits.

Method Blank Summary
Form 4
Volatiles

Client	: GZA GeoEnvironmental, Inc.	**Lab Number**	: L1920874
Project Name	: ENCORE BOSTON HARBOR	**Project Number**	: 01.0171521.25
Lab Sample ID	: WG1238969-5	**Lab File ID**	: VJ190520A14
Instrument ID	: JACK		
Matrix	: WATER	**Analysis Date**	: 05/20/19 07:23

Client Sample No.	Lab Sample ID	Analysis Date
WG1238969-3LCS	WG1238969-3	05/20/19 06:15
WG1238969-4LCSD	WG1238969-4	05/20/19 06:49
SP-6/8/9 COC ANALYSIS	L1920874-01	05/20/19 08:30

Calibration Verification Summary
Form 7
Volatiles

Client	: GZA GeoEnvironmental, Inc.		**Lab Number**	: L1920874	
Project Name	: ENCORE BOSTON HARBOR		**Project Number**	: 01.0171521.25	
Instrument ID	: JACK		**Calibration Date**	: 05/20/19 06:15	
Lab File ID	: VJ190520A10		**Init. Calib. Date(s)**	: 04/29/19	04/29/19
Sample No	: WG1238969-2		**Init. Calib. Times**	: 09:36	12:56
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	30	89	0
1,2-Dichloroethane-d4	0.27	0.259	-	4.1	30	84	0
1,4-Dioxane	0.00301	0.0037	-	-22.9	30	107	0
1,4-Dichlorobenzene-d4	1	1	-	0	30	108	0
4-Bromofluorobenzene	1.221	1.12	-	8.3	30	98	0

* Value outside of QC limits.

Sterling Analytical, Inc.
15 Agawam Avenue
West Springfield, MA 01089
Phone (413) 214-6541 Fax (413) 214-6842
email-madhu@sterlinganalytical.com

Mass Certification - MA-00071
Conn Certification - PH-0520

Visit our website: www.sterlinganalytical.com

Report Date May 23, 2019

Customer	Contact	Laboratory Supervisor	eMail
Alpha Analytical Lab	N. Hunt	Madhu Shah	customerservice@sterlinganalytical.com

Sample Description
Analysis of Aqueous Sample

Samples Analyzed

Enclosed are Report No(s): 66807

Thank you for your business

madhu shah

Madhu Shah, Laboratory Supervisor

5/23/2019

Date

Visit our website: www.sterlinganalytical.com

Sample Analysis

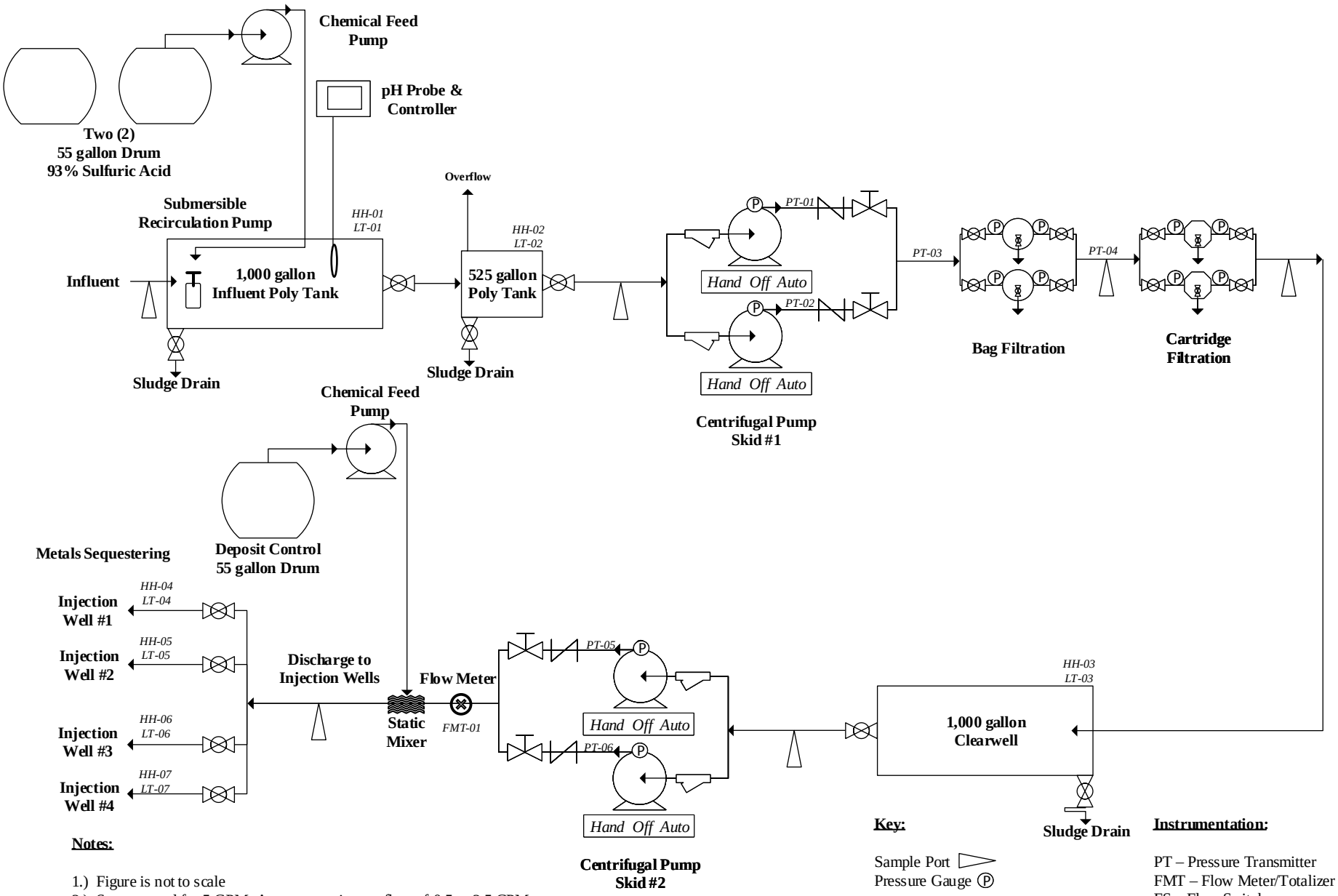
Work Order 19-0590

Sample	Description	Source	Taken/Time	Received
66807	L1920874 SP-6/8/9 COC Analysis	Alpha Analytical Lab	5/17/19	5/20/19

Parameter		Results		RDL	Method	Analyzed/Time	Tech
Fluorine	Less Than	0.10	mg/L	0.10	SM 4500-F-C	05/23/19	sjr

(1) MA & CT do not certify this parameter

APPENDIX E – UPDATED PROCESS FLOW DIAGRAM



Notes:

1.) Figure is not to scale
2.) System rated for 5 GPM. Average continuous flow of 0.5 to 2.5 GPM.

Key:

Sample Port
Pressure Gauge Ⓟ

Instrumentation:

PT – Pressure Transmitter
FMT – Flow Meter/Totalizer
FS – Flow Switch
LT– Level Transducer
HH – High High Float

LRT Lockwood Remediation Technologies LLC	Lockwood Remediation Technologies, LLC Leominster, Massachusetts 01453 Office: 774-450-7177	**Permanent Seepage Treatment System Schematic**	Encore Boston Harbor One Broadway Everett, Massachusetts	**PROJECT No.** 2-1682	**FIGURE No.** 1
	DESIGNED BY: LRT **DRAWN BY:** B. Watkins **CHECKED BY:** **DATE:** 8-29-18				