HALEY ALDRICH

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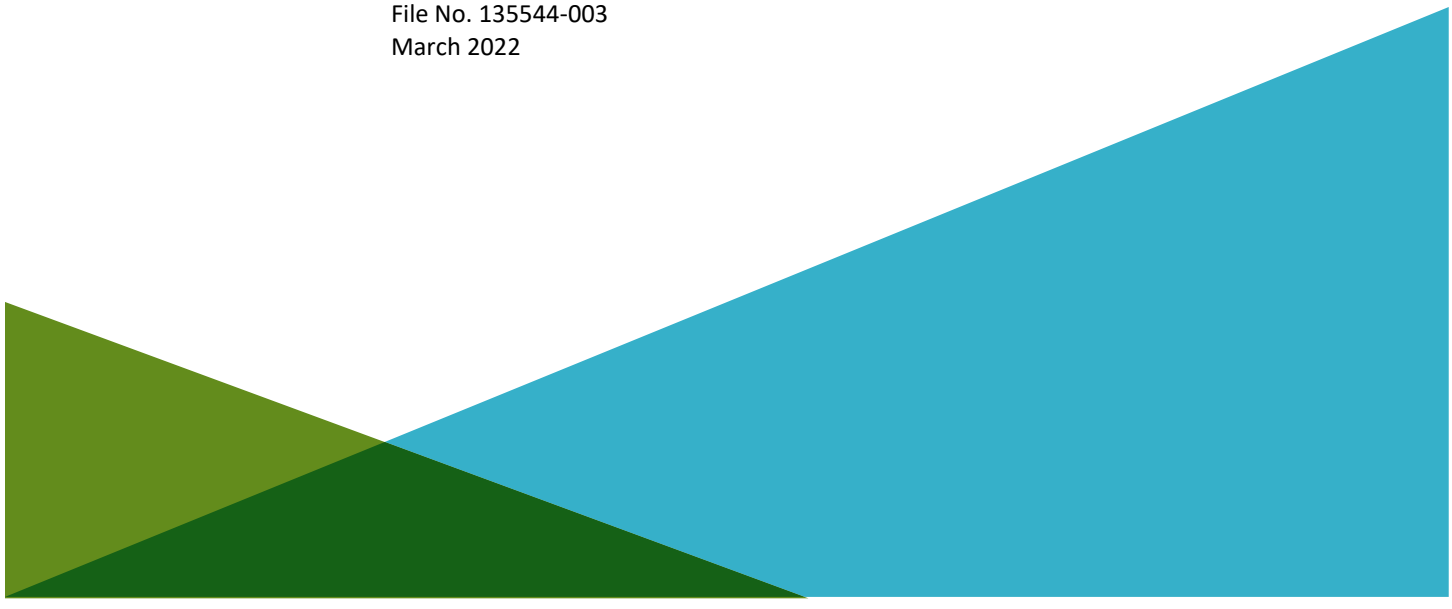
NPDES RGP PERMIT APPLICATION FOR TEMPORARY CONSTRUCTION DEWATERING NEW DEVELOPMENT AT SYLVAN ROAD WALTHAM, MASSACHUSETTS

by
Haley & Aldrich, Inc.
Boston, Massachusetts

for
US Environmental Protection Agency
Boston, Massachusetts

File No. 135544-003
March 2022



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18 March 2022
File No. 135544-003

US Environmental Protection Agency
Office of Ecosystem Protection
5 Post Office Square - Suite 100 (OEP06-01)
Boston, Massachusetts 02109-3912

Attention: Shauna Little; EPA/OEP RGP Applications Coordinator

Subject: NPDES RGP Permit Application – Temporary Construction Dewatering
New Development at Sylvan Road
Waltham, Massachusetts

Dear Shauna Little:

On behalf of our client, ARE-MA Region No. 82 LLC., Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this submission for a National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) temporary construction dewatering permit for the subject site located on Sylvan Road (the "site") in Waltham, Massachusetts. The general site location is shown on Figure 1. The information presented herein has been prepared to follow the requirements of the 2017 US Environmental Protection Agency (EPA) NPDES RGP. A copy of the completed Notice of Intent (NOI) form is included as Appendix A.

As application is for a general permit to discharge to an Outstanding Resource Water (ORW), a WM15 Transmittal Form and $500 fee have been submitted to MassDEP concurrently with this application; a copy of the WM15 Transmittal Form is included in Appendix B.

DISCHARGE TO AN OUTSTANDING RESOURCE WATER APPLICABILITY

Based on conversations with MassDEP, we understand that authorization for temporary construction discharge under a NPDES RGP may be issued to the subject site, which is within an ORW, if the criteria listed under 314 CMR 4.04(5)(a) are met. Responses to these criteria are provided below:

1. ***The discharge is necessary to accommodate important economic or social development in the area in which the waters are located*:** This project will redevelop an existing parking lot and wooded areas into office buildings and lab space, which will provide numerous jobs for the community. Temporary discharge of construction dewatering effluent is necessary to enable foundation construction, manage stormwater runoff, and maintain stability of soil slopes and excavation support systems.

2. ***No less environmentally damaging alternative site for the activity, receptor for the disposal, or method of elimination of the discharge is reasonably viable or feasible***: The project is planning to exhaust all on-site dewatering effluent management options prior to off-site discharge. On-site management of temporary construction dewatering effluent is planned to include the following one or both of the following:

    - Construct an approximate 20,000 sq ft infiltration system beneath the adjacent 50 Sylvan parking lot which will be used during construction to recharge stormwater and collected groundwater.
    - Construct a "dry pond" in the northeast end of the site early in construction to increase storage capacity during/after rain events prior to on-site infiltration.

    Due to subsurface condition constraints (high groundwater, shallow bedrock, and silty glacial till soils), complete on-site management/recharge of construction dewatering effluent is not feasible. Additionally, based on our conversations with the MWRA as well as MassDEP's correspondence with MWRA, we understand MWRA will *not* approve a temporary construction dewatering permit for discharge to the sanitary system since the sanitary and storm sewer systems are separated in this area. It is cost-prohibitive to containerize the dewatering effluent and dispose of it off-site due to the anticipated pumping rate and project duration.

3. ***To the maximum extent feasible, the discharge and activity are designed and conducted to minimize adverse impacts on water quality, including implementation of source reduction practices*** As mentioned above, off-site discharge will be minimized and only conducted if necessary after on-site recharge methods are fully utilized. Installation of a groundwater cut-off such as steel sheeting is infeasible due to the large volume of cobbles and boulders in the site soils which prevents installation of sheeting.

4. ***The discharge will not impair existing water uses and will not result in a level of water quality less than that specified for the Class****:* Prior to discharge, construction dewatering effluent will be routed through frac tanks, bag filters, and a treatment system designed to meet NPDES RGP Effluent Criteria. Routine compliance sampling is planned to monitor system performance during dewatering per permit requirements. The majority of the effluent is anticipated to be stormwater.

Additional information regarding the above responses is provided herein.

EXISTING SITE CONDITIONS

The subject site is part of a 54-acre campus that is partially occupied by three office building units (two to three stories) and a three-story garage building. The campus is bisected by Sylvan Road with the existing buildings located west of Sylvan Road and a paved parking lot and undeveloped wooded lot (subject site) located east of Sylvan Road. The existing buildings are surrounded by bituminous-paved parking lots, roads and small landscaped areas.

The subject site is surrounded by Winter Street and Cambridge Reservoir to the north, commercial buildings to the east, a commercial building and wooded lot to the south, and the Hobbs Brook to the west. The existing development area (west of Sylvan Road) is relatively flat, with site grades typically ranging from El. 148 to 151. The proposed development area (east of Sylvan Road) is wooded and slopes moderately from east to west with ground surface elevations ranging from about El. 160 to El. 195. Existing site conditions are shown on Figure 2.

PROPOSED CONSTRUCTION

The subject development includes construction in the undeveloped lot east of Sylvan Road. The proposed construction consists of two new six-level office/ laboratory buildings and a six-level parking structure, with a combined footprint of approximately 153,000 sq ft. The proposed buildings will be positioned on the western portion of the wooded site, fronting Sylvan Road. The parking deck will be positioned on the eastern portion of the site, fronting West Street. Proposed construction also includes installation of new utilities, access roads, a landscaped courtyard between the new development buildings and a subsurface infiltration system for recharge of groundwater collected in foundation and underslab drains.

Significant excavation of overburden soils and bedrock will be required to construct the new office buildings and the garage. Excavations are planned to extend up to 30 feet below pre-construction site grades near West Street. Construction is anticipated to begin in Q1 2023 with substantial completion anticipated to be achieved in Q3 of 2025.

ENVIRONMENTAL CONDITIONS AND REGULATORY BACKGROUND

Portions of the subject site have been impacted by area-wide chlorinated volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and associated breakdown compounds trichloroethene (TCE), cis-1,2-dichloroethylene and vinyl chloride present in the groundwater above applicable MCP reportable concentrations as a result of upgradient off-property releases east of West Street. Downgradient Property Status Opinions were submitted in 2009/2010 concluding that the VOC contaminants in groundwater were migrating in bedrock from one or more of the upgradient sources and flowing into the overburden aquifer on the subject property.

SUBSURFACE EXPLORATION PROGRAMS

Several explorations have been conducted at the Site for geotechnical and environmental purposes. The locations of subsurface explorations relative to existing conditions and proposed construction are shown on the attached site and subsurface exploration location plan (Figure 2).

GROUNDWATER QUALITY TESTING AND RESULTS

Haley & Aldrich collected groundwater samples to characterize groundwater quality for temporary construction dewatering. Six groundwater samples were collected from observation wells in the new development area in November 2020 and April 2021 and submitted to an analytical testing laboratory to be analyzed for presence of VOCs. Two groundwater samples were collected from upgradient and

centrally located observation wells in the new development area (HA20-6 and HA21-21) in June 2021 and submitted for analysis of the NPDES dewatering permit suite of analytes and per- and polyfluoroalkyl substances (PFAS) to support permitting efforts. The results of the groundwater sampling performed at the site indicated concentrations of tetrachlorethylene (PCE) and trichlorethylene (TCE) above applicable MCP Reportable Concentrations at locations HA20-9 and HA20-7 (RCGW-2), respectively, and PCE at location HA20-3 (RCGW-1). Additionally, sampling for PFAS indicated concentrations above the MassDEP Anti-Degradation Provisions. The results of groundwater quality testing for NPDES parameters and other site activities are summarized on Tables I and II, respectively, and laboratory data reports are included in Appendix C.

RECEIVING WATER SAMPLING AND DILUTION FACTOR

On 23 June 2021, one sample was collected from Hobbs Brook and submitted to Alpha for analysis of hardness, ammonia, total metals, and pH. Temperature was measured in the field at the time of sampling. The laboratory data report is included in Appendix C, and the tabulated results are provided in Table I.

The seven-day-ten-year flow (7Q10) of the receiving water was established to be 0.33 based on the USGS StreamStats report and conversations with MassDEP. We have also confirmed with MassDEP that the dilution factor for the receiving waters is 2.48. The StreamStats Report, Dilution Factor calculations, and confirmation from MassDEP are included in Appendix D.

EFFLUENT CRITERIA DETERMINATION

Groundwater and Receiving Water data were input into the WQBEL Calculation spreadsheet and used to calculate the effluent criteria for the site. Copies of the “EnterData” and “FreshwaterResults” tabs from the Excel file provided as an additional resource by EPA are included in Appendix D.

DEWATERING SYSTEM AND OFF-SITE DISCHARGE

Temporary construction dewatering effluent will be required to facilitate foundation construction, manage stormwater runoff, and maintain stability of soil slopes and excavation support systems. The typical dewatering rates are expected to range from 5 to 10 gpm with maximum discharge rates up to 100 gallons per minute (gpm) as a result of storm events. Temporary dewatering will be conducted using a combination of shallow sumps, pits, and trenches.

During dry periods where construction dewatering effluent is primarily groundwater, the effluent will be recharged in the new groundwater infiltration system which is planned to be installed south of the 50 Sylvan Road building (Route A, Figure 3). Recharge on other portions of the site is not considered feasible due to poor infiltration rates in the glacial till and presence of shallow bedrock. During precipitation events, the capacity of the new groundwater infiltration system may be exceeded. Dewatering effluent during precipitation events (in excess of the typical site flow rates) will be routed to a proposed dry pond constructed in the northeast corner of the site for increased storage (Route B, Figure 3). Temporary construction dewatering effluent in excess of the capacity for Paths A & B will be

routed to a new drainage manhole which discharges to the existing stormwater detention pond north of 40 Sylvan (Route C, Figure 3).

Prior to discharge, dewatering effluent will be routed through sedimentation tank(s), bag filters, and other necessary treatment components (ion exchange, granular activated carbon, and/or pH adjustment), to remove suspended solids, undissolved chemical constituents, PFAS, and other contaminants as required by other entities, as shown on Figure 4. A typical dewatering treatment system and associated submittal documents (for activated carbon canisters and ion exchange system) are included in Appendix E. A Notice of Change (NOC) will be submitted to EPA if additional treatment components need to be mobilized at the site.

A pH adjustment system may be added at the head of the treatment system, if necessary. An additive to be determined by the contractor will be used to adjust the pH as necessary to maintain pH within discharge requirements of 6.5 to 8.3, and dosing will be automatically controlled using a meter pump, pH controller, and probe. The additive will be stored in a 55-gallon drum within secondary containment. The rest of the water treatment system will remain unchanged.

In accordance with Part 2.5.3.d.i of the RGP, the product information, including chemical formula, SDS, CAS registry number, manufacturer, and associated hazards, toxicological and ecological information, and manufacturer information, including dosing and metering, of typical additives (Type I Strong Base Anion Exchange Resin Chloride Form, charcoal (activated carbon) and sodium hydroxide) are provided in Appendix E. A summary of control measures for proper handling and spill prevention are incorporated in the Best Management Practices Plan and include regular maintenance for proper operation, daily monitoring for the condition of the treatment system, storage in appropriate containers in accordance with local, state, and federal regulations, and appropriate training for employees who have direct or indirect responsibility for compliance with the RGP.

Part F of the RGP NOI requires that chemical additives be identified if applied to the effluent prior to discharge. To satisfy the confirmation requirements of RGP Part 2.5.3.d.ii:

1. The addition of a pH conditioner will not add any pollutants in concentrations which exceed permit effluent limitations;
2. The use of this chemical will not result in the exceedance of any applicable water quality standard; and
3. This chemical will not add any pollutants that would justify the application of permit conditions that are different from or absent in the permit.

DOCUMENTATION OF NATIONAL HISTORIC PRESERVATION ACT ELIGIBILITY REQUIREMENTS

Based on our review of the U.S. National Register of Historic Places (NRHP) and the Massachusetts Cultural Resource Information System (MACRIS), no historic properties are present at the site. Discharges and discharge-related activities are not considered to have the potential to affect historic properties. The discharge is considered to meet Criterion A as noted in the NOI. NRHP Documentation is included in Appendix F.

DETERMINATION OF ENDANGERED SPECIES ACT ELIGIBILITY

According to the guidelines outlined in Appendix G of the 2017 NPDES RGP, a preliminary determination for the action area associated with this project was established using the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation (IPAC) online system; a copy of the determination is included in Appendix G. The Northern Long-Eared Bat, a "threatened" species, was identified as potentially living in the project area, however the discharge activities are not anticipated to impact the habitat or activities of these mammals. Based on the results of the determination, the project and action area are considered to meet FWS Criterion A as no listed species or critical habitat are expected to be in proximity of the discharges or action area.

SUPPLEMENTAL INFORMATION

The proposed discharge is to Hobbs Brook, a Class A Public Water Supply and Outstanding Resource Water. It is therefore subject to a separate Tier 2½ antidegradation review and 30-day public comment period under 314 CMR 404(3)(b), Antidegradation Provisions of the Massachusetts Surface Water Quality Standards.

A Best Management Practices Plan (BMPP), which outlines the proposed discharge operations covered under the RGP, will be available at the site.

Owner and Operator Information

Owner:

ARE-MA Region No. 82, LLC.
400 Technology Square
Cambridge, MA 02140
Attn: Maggie Capelle

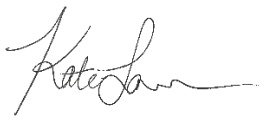
Operator:

Consigli Construction
72 Sumner Street
Milford, MA 01057
Attn: Steve Johnson

CLOSING

Thank you very much for your consideration. Please feel free to contact us should you wish to discuss the information contained herein or if you need additional information.

Sincerely yours,
HALEY & ALDRICH, INC.



Kate Lamberti, E.I.T.
Staff Engineer

Keith Johnson, P.E., LSP (MA)
Technical Expert

Enclosures:

- Table I – Summary of Groundwater Quality Data
- Table II – Summary of Surface Water Quality Data
- Figure 1 – Project Locus
- Figure 2 – Site and Subsurface Exploration Location Plan
- Figure 3 – Proposed Dewatering Effluent Routes
- Figure 4 – Typical Water Treatment System Schematic
- Appendix A – Notice of Intent
- Appendix B – Copy of WM15 Transmittal Form
- Appendix C – Laboratory Data Reports
- Appendix D – Dilution Factor and Effluent Limit Calculations
- Appendix E – Contractor's Dewatering Submittal
- Appendix F – National Register of Historic Places Documentation
- Appendix G – Endangered Species Act Documentation

TABLE I
SUMMARY OF GROUNDWATER QUALITY DATA
RESERVOIR WOODS EAST
WALTHAM, MA
FILE NO. 135544

	Criteria					
Location Name	MCP	MCP Reportable		HA20-6(OW)	HA21-20(OW)	BROOK
Sample Name	Reportable	Concentration	MassDEP	2021-0604-HA20-6(OW)	2021-0604-HA21-20(OW)	2021-0604-BROOK
Sample Date	Concentration	RCGW-2	Antidegradation	06/04/2021	06/04/2021	06/04/2021
Lab Sample ID	RCGW-2	(12/27/2019	Authorization Limits	L2130256-02	L2130256-03	L2130256-01
Sample Elevation (ft NAVD88)	(2014)	PFAS only)		187 to 187	174 to 174	-
Volatile Organic Compounds (ug/L)						
1,1,1-Trichloroethane	4000	NA	NA	ND (2)	ND (2)	-
1,1,2-Trichloroethane	900	NA	NA	ND (1.5)	ND (1.5)	-
1,1-Dichloroethane	2000	NA	NA	ND (1.5)	ND (1.5)	-
1,1-Dichloroethene	80	NA	NA	ND (1)	ND (1)	-
1,2-Dibromoethane (Ethylene Dibromide)	2	NA	NA	ND (0.01)	ND (0.01)	-
1,2-Dichlorobenzene	2000	NA	NA	ND (5)	ND (5)	-
1,2-Dichloroethane	5	NA	NA	ND (1.5)	ND (1.5)	-
1,3-Dichlorobenzene	6000	NA	NA	ND (5)	ND (5)	-
1,4-Dichlorobenzene	60	NA	NA	ND (5)	ND (5)	-
1,4-Dioxane	6000	NA	NA	ND (5)	ND (5)	-
Acetone	50000	NA	NA	ND (10)	ND (10)	-
Benzene	1000	NA	NA	ND (1)	ND (1)	-
Carbon tetrachloride	2	NA	NA	ND (1)	ND (1)	-
cis-1,2-Dichloroethene	20	NA	NA	ND (1)	ND (1)	-
Ethylbenzene	5000	NA	NA	ND (1)	ND (1)	-
m,p-Xylenes	NA	NA	NA	ND (2)	ND (2)	-
Methyl Tert Butyl Ether	5000	NA	NA	ND (10)	ND (10)	-
Methylene chloride	2000	NA	NA	ND (1)	ND (1)	-
o-Xylene	NA	NA	NA	ND (1)	ND (1)	-
Tert-Amyl Methyl Ether (TAME)	NA	NA	NA	ND (20)	ND (20)	-
Tert-Butyl Alcohol (tert-Butanol)	NA	NA	NA	ND (100)	ND (100)	-
Tetrachloroethene	50	NA	NA	ND (1)	ND (1)	-
Toluene	40000	NA	NA	ND (1)	ND (1)	-
Trichloroethene	5	NA	NA	1.7	ND (1)	-
Vinyl chloride	2	NA	NA	ND (1)	ND (1)	-
Xylene (total)	3000	NA	NA	ND (1)	ND (1)	-
Semi-Volatile Organic Compounds (ug/L)						
bis(2-Ethylhexyl)phthalate	50000	NA	NA	ND (2.2)	ND (2.2)	-
Butyl benzylphthalate	10000	NA	NA	ND (5)	ND (5)	-
Diethyl phthalate	9000	NA	NA	ND (5)	ND (5)	-
Dimethyl phthalate	50000	NA	NA	ND (5)	ND (5)	-
Di-n-butylphthalate	5000	NA	NA	ND (5)	ND (5)	-
Di-n-octyl phthalate	100000	NA	NA	ND (5)	ND (5)	-
Acenaphthene	6000	NA	NA	ND (0.1)	ND (0.1)	-
Acenaphthylene	40	NA	NA	ND (0.1)	ND (0.1)	-
Anthracene	30	NA	NA	ND (0.1)	ND (0.1)	-
Benzo(a)anthracene	1000	NA	NA	ND (0.1)	ND (0.1)	-
Benzo(a)pyrene	500	NA	NA	ND (0.1)	ND (0.1)	-
Benzo(b)fluoranthene	400	NA	NA	ND (0.1)	ND (0.1)	-
Benzo(g,h,i)perylene	20	NA	NA	ND (0.1)	ND (0.1)	-
Benzo(k)fluoranthene	100	NA	NA	ND (0.1)	ND (0.1)	-
Chrysene	70	NA	NA	ND (0.1)	ND (0.1)	-
Dibenz(a,h)anthracene	40	NA	NA	ND (0.1)	ND (0.1)	-
Fluoranthene	200	NA	NA	ND (0.1)	ND (0.1)	-
Fluorene	40	NA	NA	ND (0.1)	ND (0.1)	-
Indeno(1,2,3-cd)pyrene	100	NA	NA	ND (0.1)	ND (0.1)	-
Naphthalene	700	NA	NA	ND (0.1)	ND (0.1)	-
Pentachlorophenol	200	NA	NA	ND (1)	ND (1)	-
Phenanthrene	10000	NA	NA	ND (0.1)	ND (0.1)	-
Pyrene	20	NA	NA	ND (0.1)	ND (0.1)	-
Total Petroleum Hydrocarbons (mg/L)						
Petroleum hydrocarbons	5	NA	NA	ND (3.6)	ND (4)	-
Inorganic Compounds (mg/L)						
Antimony, Total	8	NA	NA	ND (0.02)	ND (0.02)	ND (0.02)
Arsenic, Total	0.9	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Cadmium, Total	0.004	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)
Chromium, Total	0.3	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Chromium III (Trivalent), Total	0.6	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)
Chromium VI (Hexavalent), Dissolved	0.3	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)
Copper, Total	100	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Iron, Total	NA	NA	NA	0.241	ND (0.05)	0.128
Lead, Total	0.01	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Mercury, Total	0.02	NA	NA	ND (0.0002)	ND (0.0002)	ND (0.0002)
Nickel, Total	0.2	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)
Selenium, Total	0.1	NA	NA	ND (0.025)	ND (0.025)	ND (0.025)
Silver, Total	0.007	NA	NA	ND (0.002)	ND (0.002)	ND (0.002)
Zinc, Total	0.9	NA	NA	ND (0.05)	ND (0.05)	ND (0.05)
PCBs (ug/L)						
Aroclor-1016 (PCB-1016)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1221 (PCB-1221)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1232 (PCB-1232)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1242 (PCB-1242)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1248 (PCB-1248)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1254 (PCB-1254)	5	NA	NA	ND (0.25)	ND (0.25)	-
Aroclor-1260 (PCB-1260)	5	NA	NA	ND (0.2)	ND (0.2)	-
PFAS (ng/L)						
Perfluorodecanoic acid (PFDA)	NA	40000000	2.0	ND (1.81)	ND (1.81)	-
Perfluoroheptanoic acid (PFHpA)	NA	40000000	2.0	**5.52**	**2.24**	-
Perfluorohexanesulfonic acid (PFHxS)	NA	500000	2.0	**3.8**	**3.55**	-
Perfluorononanoic Acid (PFNA)	NA	40000000	2.0	ND (1.81)	ND (1.81)	-
Perfluorooctanesulfonic acid (PFOS)	NA	500000	2.0	**76.2**	**50.1**	-
Perfluorooctanoic Acid (PFOA)	NA	40000000	2.0	**23.5**	**13.2**	-
Field Parameters						
Temperature (Deg C)	NA	NA	NA	14.6	11.6	15.6
Dissolved Oxygen, Field (mg/L)	NA	NA	NA	6.41	7.33	5.74
Conductivity, Field (mS/cm)	NA	NA	NA	4.922	0.929	0.774
ORP, Field (mv)	NA	NA	NA	277	286	241.1
Turbidity, Field (NTU)	NA	NA	NA	8.45	5.84	3.14
pH, Field (SU)	NA	NA	NA	6.34	6.07	6.86
Other						
Ammonia, Total (mg/L)	NA	NA	NA	ND (0.075)	ND (0.075)	0.139
Chloride, Total (mg/L)	NA	NA	NA	1700	298	-
Chlorine, residual, Total (mg/L)	NA	NA	NA	ND (0.02)	ND (0.02)	-
Cyanide, Total (mg/L)	0.03	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Total Phenols (mg/L)	NA	NA	NA	ND (0.03)	ND (0.03)	-
Total Suspended Solids (TSS) (mg/L)	NA	NA	NA	6.1	ND (5)	-

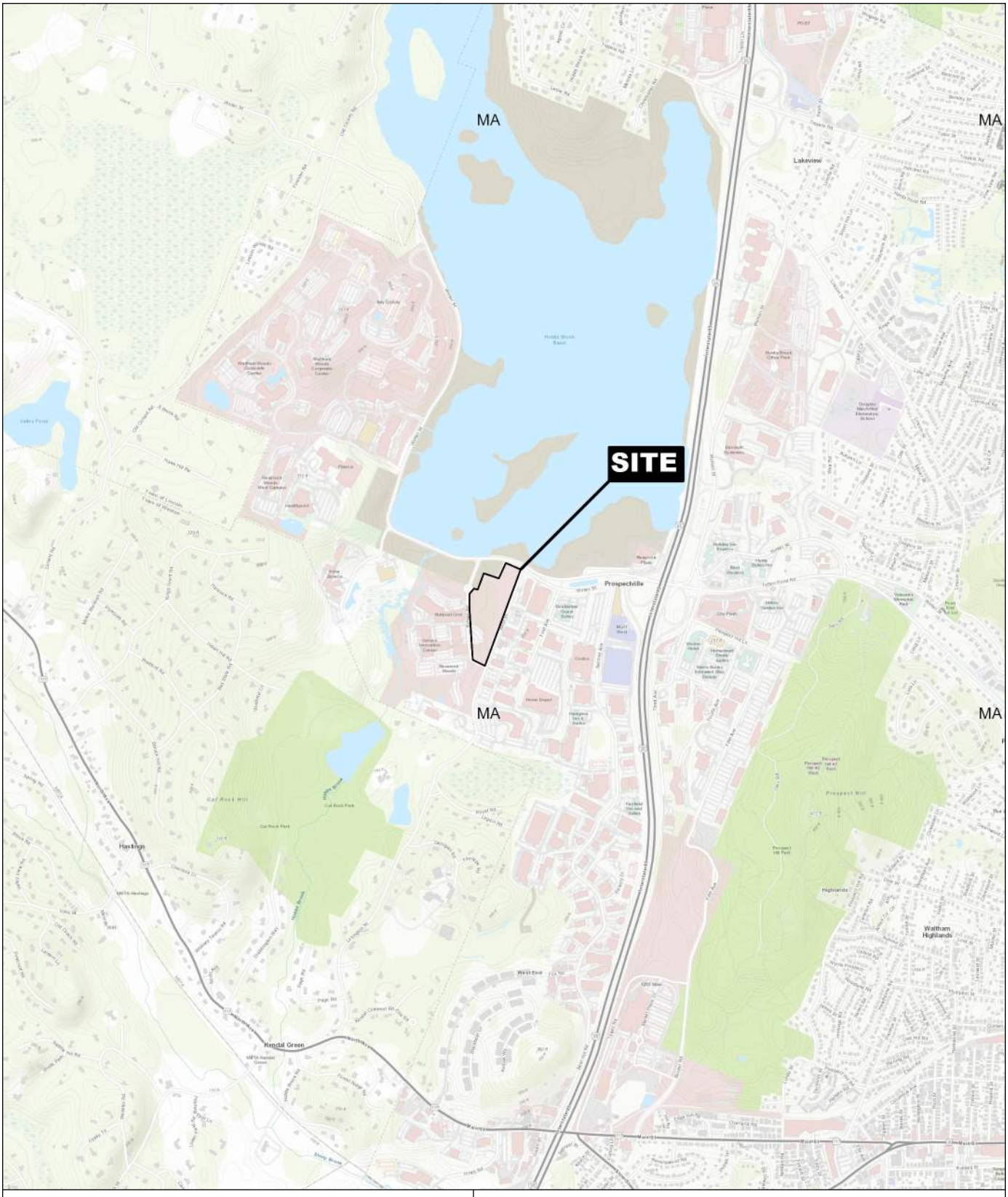
ABBREVIATIONS AND NOTES:
MCP: 310 CMR 40.0000 Massachusetts Contingency Plan effective 25 April 2014; revisions 23 May 2014.
mg/L: milligram per liter
NA: Not Applicable
ND (2.5): Not detected, number in parentheses is the laboratory reporting limit
RC: MCP Reportable Concentration
µg/L: micrograms per liter

- **Bold** values indicate an exceedance of the RCGW-2 or Antidegradation criteria.

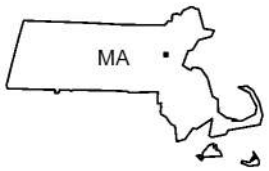
TABLE II
SUMMARY OF GROUNDWATER QUALITY DATA
RESERVOIR WOODS EAST
WALTHAM, MA
FILE NO. 135544

Location Area	Criteria			40 Sylvan Road	50-60 Sylvan Road			New Development							
Location Name				HA20-9(OW)	HA20-8(OW)	HA21-23(OW)	HA21-24(OW)	HA20-3(OW)	HA20-5(OW)	HA20-6(OW)	HA20-7(OW)	HA21-13(OW)	HA21-2(OW)	HA21-20(OW)	HA21-6(OW)
Sample Name				HA20-9(OW)-20201123	HA20-8(OW)-20201123	HA21-23(OW)-20210412	HA21-24(OW)-20210413	HA20-3(OW)-20201124	HA20-5(OW)-20201123	HA20-6(OW)-20201123	HA20-7(OW)-20201123	HA21-13(OW)-20210408	HA21-2(OW)-20210412	HA21-20(OW)-20210409	HA21-6(OW)-20210409
Sample Date	NPDES RGP MA Freshwater WQBELs 2017	MCP Reportable Concentration RCGW-1 2014	MCP Reportable Concentration RCGW-2 2014	11/23/2020	11/23/2020	04/12/2021	04/13/2021	11/24/2020	11/23/2020	11/23/2020	11/23/2020	04/08/2021	04/12/2021	04/09/2021	04/09/2021
Lab Sample ID				L2052303-02	L2052303-01	L2118387-02	L2118767-01	L2052478-01	L2052303-04	L2052303-05	L2052303-03	L2117917-01	L2118387-01	L2118139-01	L2118139-02
Screen Interval (ft, depth)				5 - 15.5 (ft)	4 - 9.5 (ft)	4 - 14 (ft)	4 - 16 (ft)	7 - 17 (ft)	6 - 17.5 (ft)	14 - 24.5 (ft)	14 - 24 (ft)	9 - 24 (ft)	5 - 10 (ft)	9 - 19 (ft)	6 - 16 (ft)
Screen Elevation (El. NAVD 88)				146.3 to 135.8	145.6 to 140.1	145.5 to 135.5	144.6 to 132.6	171.8 to 161.8	171.4 to 159.9	173 to 162.5	161.1 to 151.1	170.5 to 155.5	153.8 to 148.8	165 to 155	163.5 to 153.5
Applicable MCP Reportable Concentration				RCGW-2	RCGW-2	RCGW-2	RCGW-2	RCGW-1	RCGW-2	RCGW-2	RCGW-2	RCGW-2	RCGW-2	RCGW-2	RCGW-2
Screened Material				GLACIOLACUSTRINE/ TILL	GLACIOFLUVIAL/ GLACIOLACUSTRINE	GLACIOFLUVIAL/ TILL	GLACIAL TILL	GLACIAL TILL/ BEDROCK	BEDROCK	GLACIAL TILL	BEDROCK	GLACIAL TILL	FILL/ GLACIOLACUSTRINE	GLACIAL TILL	GLACIAL TILL
Volatile Organic Compounds (ug/L)															
1,1-Dichloroethane	70	70	2000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	1.4	ND (1)	ND (1)	ND (1)	ND (1)
Acetone	7970	6300	50000	ND (5)	ND (5)	ND (5)	5.5	ND (5)	ND (5)	5	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Chloroform (Trichloromethane)	NA	50	50	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	1.3	ND (1)	ND (1)	ND (1)	ND (1)
Tetrachloroethene	3.3	5	50	**200**	ND (1)	ND (1)	ND (1)	**12**	3	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichloroethene	5	5	5	ND (1)	ND (1)	4.2	1.4	ND (1)	ND (1)	2.8	**17**	ND (1)	ND (1)	ND (1)	ND (1)
Field Parameters															
Temperature (Deg C)	NA	NA	NA	15.4	14.3	12.1	11.5	13.6	13.5	13.4	14.6	10.8	11.9	9.7	11.5
Dissolved Oxygen, Field (mg/L)	NA	NA	NA	0.53	1.31	1.36	0.36	9.65	1.8	3.6	1.99	6.15	5.04	8.72	7
Conductivity, Field (mS/cm)	NA	NA	NA	6.315	2.232	2.21	1.74	-	1.435	2.875	2.667	1.21	3.18	0.62	0.83
ORP, Field (mv)	NA	NA	NA	84.6	163.5	-41	111.9	145.5	38.6	44.8	143.5	123.1	96.3	143.6	28.9
Turbidity, Field (NTU)	NA	NA	NA	88	22.2	13.1	4.22	4.13	4.19	22.15	91.3	26.8	394	10.5	16.5
pH, Field (SU)	NA	NA	NA	6.82	6.77	6.47	5.65	6.53	6.18	6.46	6.47	6.15	6.3	5.9	6.15

ABBREVIATIONS AND NOTES:
-: Not Analyzed
µg/L: micrograms per liter
MCP: 310 CMR 40.0000 Massachusetts Contingency Plan effective 25 April 2014; revisions 23 May 2014.
mS/cm: Microsiemens per centimeter
mv: millivolts
NTU: Nephelometric Turbidity Unit
NA: Not Applicable
ND (2.5): Not detected, number in parentheses is the laboratory detection limit
RC: MCP Reportable Concentration
WQBELs: Water Quality-Based Effluent Limitations
- Analytes detected in at least one sample are reported herein. For a complete list of analytes see the laboratory data sheets.
- **Bold** values indicate exceedance of applicable RCGW criteria.



SITE COORDINATES: 42°23'47"N, 71°16'12"W



MAP SOURCE: USGS

HALEY ALDRICH

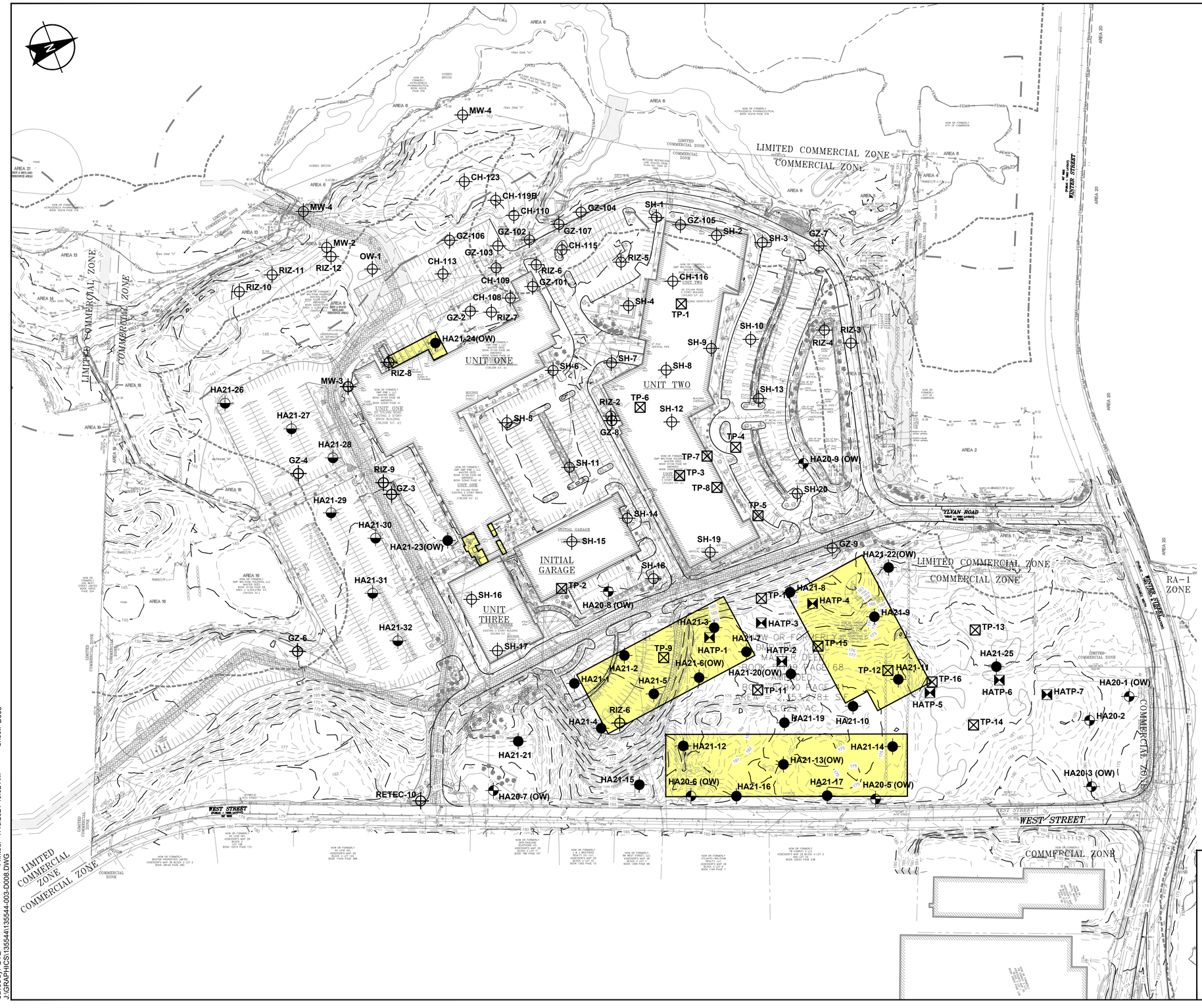
RESERVOIR WOODS EAST
SYLVAN ROAD
WALTHAM, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 INCH = 2,000 FEET
MARCH 2022

FIGURE 1

0135544_003_LOCUS HALEYALDRICHIRGENOVESI



LEGEND

HA21-26	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY SEABOARD DRILLING, INC. ON 3 AND 4 JUNE 2021 AND OBSERVED BY HALEY & ALDRICH STAFF
HA21-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY NEW ENGLAND BORING CONTRACTORS ON 9 MARCH THROUGH 8 APRIL 2021 AND OBSERVED BY HALEY & ALDRICH STAFF
HA20-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY NEW ENGLAND BORING CONTRACTORS ON 10 THROUGH 19 NOVEMBER 2020 AND OBSERVED BY HALEY & ALDRICH STAFF
HATP-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY EARTHWORK INDUSTRIES, INC. ON 19 NOVEMBER 2020 AND OBSERVED BY HALEY & ALDRICH STAFF
GZ-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORINGS COMPLETED BY OTHERS
TP-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT COMPLETED BY OTHERS
(OW)	INDICATES OBSERVATION WELL INSTALLED IN COMPLETED EXPLORATION
	APPROXIMATE LOCATION OF PROPOSED DEVELOPMENT

NOTES

1. BASE PLAN TAKEN FROM AN ELECTRONIC FILE TITLED "188765A WITH OLD WETLANDS LINES FOR ARE.dwg", PROVIDED BY LINDEN ENGINEERING, PROVIDED ON 12 NOVEMBER 2020.
2. PROPOSED BUILDING FOOTPRINT INTERPRETED FROM AN ELECTRONIC PRESENTATION TITLED "ARE_RESEVOIR WOODS_PRESENTATION_210112_OPTION 1.PDF" PROVIDED BY JACOBS ON 25 JANUARY 2021 AND TAKEN FROM AN ELECTRONIC FILE TITLED "RWE SITE PLAN-WITH GROUND FLOOR V4_A.DWG" PROVIDED BY VHB ON 20 APRIL 2021.

0 100 200 300 400
SCALE IN FEET

HALEY ALDRICH

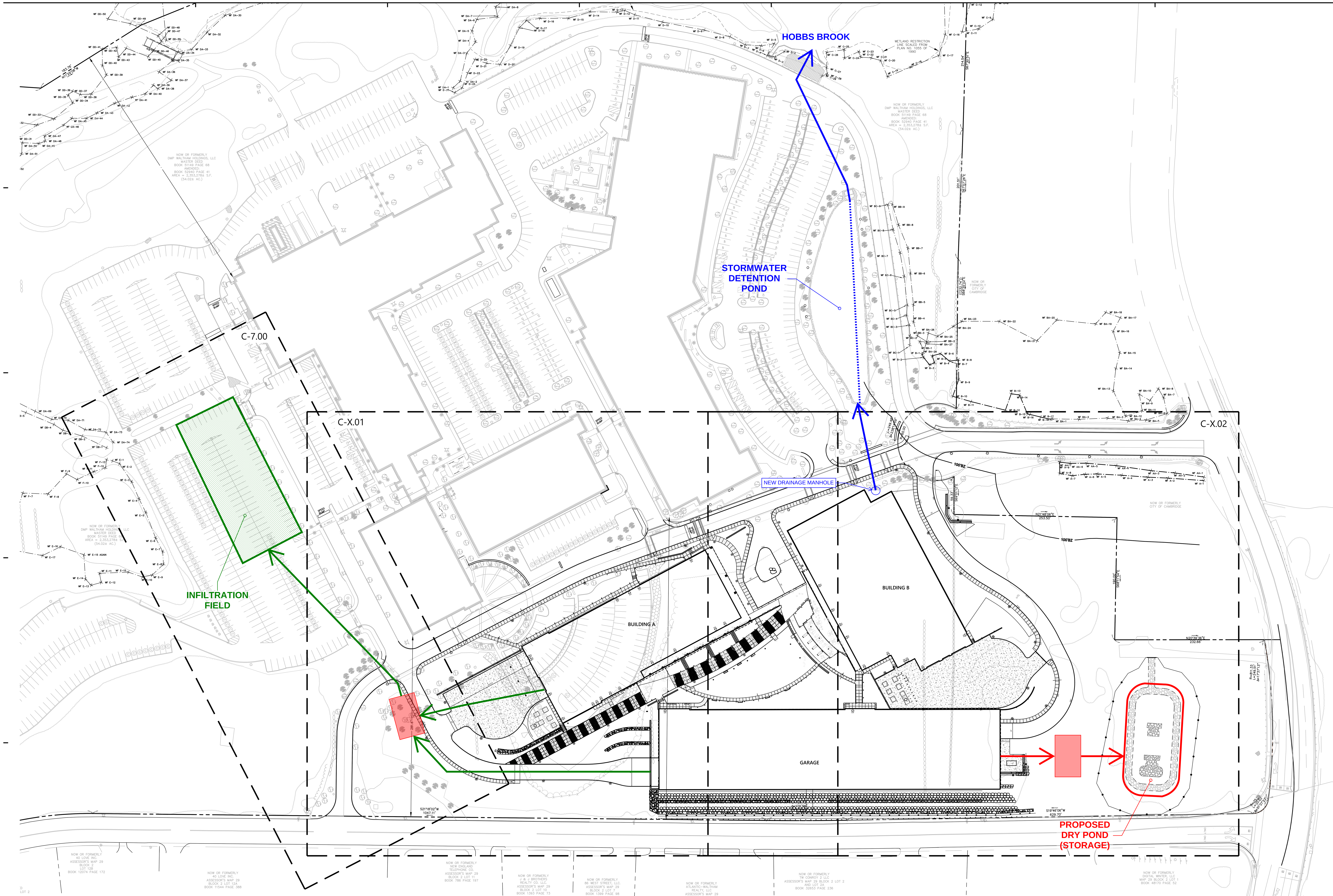
RESERVOIR WOODS EAST
40, 50, 60 SYLVAN ROAD
WALTHAM, MASSACHUSETTS

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
MARCH 2022

FIGURE 2

Saved by: DTE Printed: 7/13/2021 10:02 AM Sheet: D008
J:\GRAPHICS\135544\135544I-003-D008.DWG



LEGEND

- CONCEPTUAL DEWATERNG EFFLUENT TREATMENT SYSTEM (LOCATION TO BE DETERMINED BY CONTRACTOR DURING CONSTRUCTION)
- ROUTE A: WATER ROUTED THROUGH EFFLUENT TREATMENT SYSTEM AND INTO NEW INFILTRATION FIELD
- ROUTE B: WATER ROUTED THROUGH TREATMENT SYSTEM, STORED IN DRY POND, THEN ROUTED TO HOBBS BROOK VIA STORMWATER DETENTION POND
- ROUTE C: WATER ROUTED TO EXISTING STORMWATER DETENTION POND VIA NEW DRAINAGE MANHOLE.

Jacobs
120 Saint James Avenue, 5th Floor
Boston, Massachusetts 02116
P: 617.242.9222
F: 617.532.4399
www.jacobs.com

Consultants:
vhb
101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Seals:

Project Client:
Alexandria Real Estate
ALEXANDRIA.
400 Technology Square Suite 101, Cambridge, Massachusetts 02139
P (617) 661-6962
F Client Fax
W www.are.com

Reservoir Woods East
Sylvan Road, Waltham MA

DESIGN DEVELOPMENT
NOT FOR CONSTRUCTION
SEPTEMBER 17, 2021

Number	Description	Date
1	ISSUED FOR PRICING	10/15/2021

HALEY ALDRICH

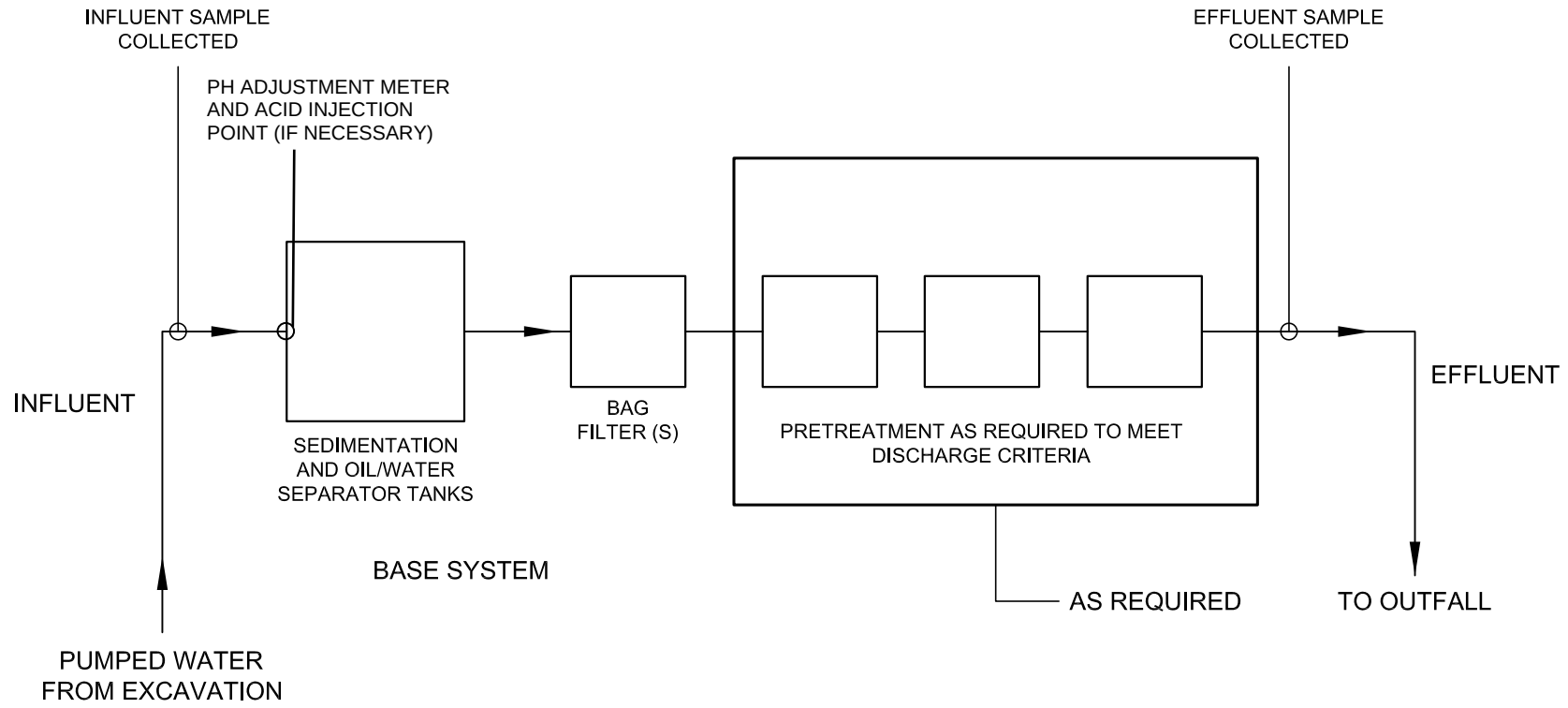
RESERVOIR WOODS EAST
WALTHAM, MASSACHUSETTS

PROPOSED DEWATERING EFFLUENT ROUTES

SCALE: AS SHOWN
MARCH 2022

FIGURE 3

G:\38625\NPDES\FIGURES\COPY-A142.DWG



LEGEND:

→ DIRECTION OF FLOW

NOTE:

1. DETAILS OF TREATMENT SYSTEM MAY VARY FROM SYSTEM INDICATED ABOVE. SPECIFIC MEANS AND METHODS OF TREATMENT TO BE SELECTED BY CONTRACTOR. WATER WILL BE TREATED TO MEET REQUIRED EFFLUENT STANDARDS.
2. PH ADJUSTMENT ACID STORAGE TO BE ADJACENT TO TREATMENT NEAR INJECTION POINT. REFER TO EQUIPMENT CUT SHEETS AND CHEMICAL SAFETY DATA SHEETS IN APPENDIX F.

HALEY ALDRICH

RESERVOIR WOODS EAST
WALTHAM, MASSACHUSETTS

PROPOSED TREATMENT SYSTEM SCHEMATIC

SCALE: NONE
MARCH 2022

FIGURE 4

APPENDIX A

Notice of Intent

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

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Reservoir Woods East</td><td colspan="3">Site address: Near 50 and 60 Sylvan Road (Undeveloped land east of Sylvan Road)
Street: Sylvan Road</td></tr>
<tr><td>City: Waltham</td><td>State: MA</td><td>Zip: 02451</td></tr>
<tr><td rowspan="4">2. Site owner
ARE MA-Region No. 82, LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Maggie Capelle</td></tr>
<tr><td colspan="2">Telephone: 206.702.7489</td><td>Email: mcapelle@are.com</td></tr>
<tr><td colspan="3">Mailing address: 400 Technology Square, Suite 101
Street: Technology Square</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02139</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Consigli Construction</td><td colspan="3">Contact Person: Gabe Mater</td></tr>
<tr><td colspan="2">Telephone: 774-573-4892</td><td>Email: gmater@consigli.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 72 Sumner Street</td></tr>
<tr><td>City: Milford</td><td>State: MA</td><td>Zip: 01057</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
N/A

NPDES permit is (check all that apply: ■ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s):
3-26589 and 3-28163
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Hobbs Brook	MA72-46	Class A

Receiving water is (check any that apply): ■ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ☐ Yes ■ No
If yes, specify:

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. Designated as Category 5 under CWA 303(d) for chloride. A final TMDL is not available. Designated uses not assessed.

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	0.33
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	2.48

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No
If yes, indicate date confirmation received: 22 July 2021

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater	☐ Contaminated surface water	☐ The receiving water	☐ Potable water; if so, indicate municipality or origin:
Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ A surface water other than the receiving water; if so, indicate waterbody:	■ Other; if so, specify: Construction site dewatering effluent

2. Source water contaminants: VOCs, PFAS	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ■ Yes ☐ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII. See Table I (attached) and MassDEP Antidegradation Requirements	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ■ Existing discharge ☐ New discharge ☐ New source	
Outfall(s): Hobbs Brook	Outfall location(s): (Latitude, Longitude) 42.397075, -71.273620
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Effluent to be routed to on-site pond prior to entering receiving water. ☐ A private storm sewer system ☐ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ☐ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: N/A Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ☐ No	
Provide the expected start and end dates of discharge(s) (month/year): March 2023+/- Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>■ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)

■ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
■ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia	✓		2	4500NH3	75	<75	<75	Report mg/L	---
Chloride		✓	2	300.0	50000	1700000	1700000	Report µg/l	---
Total Residual Chlorine	✓		2	4500CL	20	<20	<20	0.2 mg/L	137
Total Suspended Solids		✓	2	2540D	5000	6100	6100	30 mg/L	---
Antimony	✓		2	3005A	20	<20	<20	206 µg/L	7973
Arsenic		✓ *	2	3005A	5	<5	<5	104 µg/L	125
Cadmium		✓ *	2	3005A	1	<1	<1	10.2 µg/L	0.5356
Chromium III		✓ *	2	107,-	10	<10	<10	323 µg/L	140.5
Chromium VI		✓ *	2	7196A	10	<10	<10	323 µg/L	142.5
Copper	✓		2	3005A	5	<5	<5	242 µg/L	13.9
Iron		✓	2	3005A	50	241	241	5,000 µg/L	10992
Lead	✓		2	3005A	5	<5	<5	160 µg/L	1.68
Mercury		✓ *	2	245.1	0.2	<0.2	<0.2	0.739 µg/L	11.29
Nickel	✓		2	3005A	10	<10	<10	1,450 µg/L	79.5
Selenium	✓		2	3005A	25	<25	<25	235.8 µg/L	62.3
Silver	✓		2	3005A	2	<2	<2	35.1 µg/L	0.7
Zinc		✓ *	2	3005A	5	<5	<5	420 µg/L	182.1
Cyanide	✓		2	4500CN	5	<5	<5	178 mg/L	64.8
B. Non-Halogenated VOCs									
Total BTEX	✓		2	624.1	2	<2	<2	100 µg/L	---
Benzene	✓		2	624.1	1	<1	<1	5.0 µg/L	---
1,4 Dioxane	✓		2	624.1-SI	5	<5	<5	200 µg/L	---
Acetone		✓	2	624.1	5	5.5	5.5	7.97 mg/L	---
Phenol	✓		2	420.1	30	<30	<30	1,080 µg/L	3738

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✓		2	624.1	1	<1	<1	4.4 µg/L	19.9
1,2 Dichlorobenzene	✓		2	624.1	1	<1	<1	600 µg/L	---
1,3 Dichlorobenzene	✓		2	624.1	1	<1	<1	320 µg/L	---
1,4 Dichlorobenzene	✓		2	624.1	1	<1	<1	5.0 µg/L	---
Total dichlorobenzene	✓		2	624.1	1	<1	<1	763 µg/L in NH	---
1,1 Dichloroethane	✓		2	624.1	1	<1	<1	70 µg/L	---
1,2 Dichloroethane	✓		2	624.1	1	<1	<1	5.0 µg/L	---
1,1 Dichloroethylene	✓		2	624.1	1	<1	<1	3.2 µg/L	---
Ethylene Dibromide	✓		2	624.1	2	<2	<2	0.05 µg/L	---
Methylene Chloride	✓		2	624.1	2	<2	<2	4.6 µg/L	---
1,1,1 Trichloroethane	✓		2	624.1	1	<1	<1	200 µg/L	---
1,1,2 Trichloroethane	✓		2	624.1	1	<1	<1	5.0 µg/L	---
Trichloroethylene		✓	2	624.1	1	1.7	1.7	5.0 µg/L	---
Tetrachloroethylene		✓	2	624.1	1	<1	<1	5.0 µg/L	41.1
cis-1,2 Dichloroethylene	✓		2	624.1	1	<1	<1	70 µg/L	---
Vinyl Chloride	✓		2	624.1	1	<1	<1	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✓		2	625.1	5	<5	<5	190 µg/L	--
Diethylhexyl phthalate	✓		2	625.1	2.2	<2.2	<2.2	101 µg/L	27.4
Total Group I PAHs	✓		2	625.1	0.1	<0.1	<0.1	1.0 µg/L	---
Benzo(a)anthracene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1	As Total PAHs	0.0473
Benzo(a)pyrene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473
Benzo(b)fluoranthene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473
Benzo(k)fluoranthene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473
Chrysene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473
Dibenzo(a,h)anthracene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473
Indeno(1,2,3-cd)pyrene		✓ *	2	625.1-SIM	0.1	<0.1	<0.1		0.0473

* Indicates detected in soil only

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✓ *	2	625.1-SI	0.1	<0.1	<0.1	100 µg/L	---
Naphthalene	✓		2	625.1-SI	0.1	<0.1	<0.1	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✓		2	608.3	0.25	<0.25	<0.25	0.000064 µg/L	---
Pentachlorophenol	✓		2	625.1-SI	1	<1	<1	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✓ *	2	1664A	4000	<4000	<4000	5.0 mg/L	---
Ethanol **	✓		0	NA	NA	NA	NA	Report mg/L	---
Methyl-tert-Butyl Ether	✓		2	624.1	2	<2	<2	70 µg/L	249
tert-Butyl Alcohol	✓		2	624.1	100	<100	<100	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		2	624.1	2	<2	<2	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
pH		✓	2	Field		6.34	6.34		
Temperature (C)		✓	2	Field		14.6	14.6		
Oxidation Reduction Potentia		✓	2	Field		286	286		
Conductivity (mS/cm)		✓	2	Field		4.9	4.9		

* Indicates detected in soil only
** Indicates refer to cover letter

Additional compounds detected in soil only:

Metals
Arsenic
Barium
Beryllium
Cadmium
Chromium
Mercury
Vanadium
Zinc

SVOCs
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Phenanthrene
Pyrene

Other
Petroleum Hydrocarbons

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
■ Ion Exchange ☐ Precipitation/Coagulation/Flocculation ■ Separation/Filtration ■ Other; if so, specify:
Applied as necessary to meet effluent discharge criteria.

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Prior to discharge, collected water will be routed through a sedimentation tank and a bag filter and other necessary treatment components (potentially: Ion exchange, GAC, oil/water separator), to remove suspended solids and undissolved chemical constituents, as shown on Figure 4 of the NPDES permit application.

Identify each major treatment component (check any that apply):
■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter
☐ Chemical feed tank ☐ Air stripping unit ■ Bag filter ■ Other; if so, specify: GAC, ion exchange, and other treatments as necessary to meet discharge criteria.

Indicate if either of the following will occur (check any that apply):
☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Pump Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	100
Provide the proposed maximum effluent flow in gpm. (Groundwater + Stormwater)	50 to 100
Provide the average effluent flow in gpm. (Groundwater)	5 to 10
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	NA

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ■ Yes ☐ No

F. Chemical and additive information

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

☐ Algaecides/biocides ☐ Antifoams ☐ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ■ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ■ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:
pH conditioners, ion exchange, granular activated carbon, may be used in the treatment system if necessary to meet NPDES and MassDEP antidegradation effluent limits.

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

To be provided by the contractor when available. A typical treatment system to meet discharge criteria is included in Appendix E.

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

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

G. Endangered Species Act eligibility determination

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

■ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

☐ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ☐ the operator ☐ EPA ☐ Other; if so, specify:

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

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

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

H. National Historic Preservation Act eligibility determination

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

■ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

☐ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

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

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

I. Supplemental information

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

Refer to attached Haley & Aldrich, Inc. letter dated March 17, 2022

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

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

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented at the site upon initiation of discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required. Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested. Check one: Yes ☐ No ■
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested. Check one: Yes ☐ No ☐ NA ■ Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission. Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify: Check one: Yes ☐ No ☐ NA ■
Signature: Margaret Capelle Digitally signed by Margaret Capelle Date: 2022.03.18 13:10:37 -04'00' Date:
Print Name and Title: Maggie Capelle, Vice President, ARE-MA No. Region 82, LLC

APPENDIX B

Copy of WM15 Transmittal Form

Enter your transmittal number → X288880
Transmittal Number

Your unique Transmittal Number can be accessed online:
https://www.mass.gov/service-details/transmittal-form-number-for-massdep-permit-application-payment

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: MassDEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA 02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

1. Permit Code: 4-to-7-character code from permit instructions	2. Name of Permit Category
WM15	NPDES RGP

3. Type of Project or Activity: Construction dewatering associated with property development

B. Applicant Information – Firm or Individual

1. Name of Firm - Or, if party needing this approval is an individual enter name below: ARE MA-Region 82, LLC.

2. **Last Name** of Individual	3. **First Name** of Individual	4. MI
NA	NA	NA

5. Street Address: 400 Technology Square

6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #
Cambridge	MA	02140	206-702-7489	

11. Contact Person	12. e-mail address
Maggie Capelle	mcapelle@are.com

C. Facility, Site or Individual Requiring Approval

1. Name of Facility, Site or Individual: Reservoir Woods East

2. Street Address: Sylvan Road

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Waltham	MA	02451	206-702-7489	NA

8. DEP Facility Number (if Known)	9. Federal I.D. Number (if Known)	10. BWSC Tracking # (if Known)
NA	NA	3-26589 and 3-28163

D. Application Prepared by (if different from Section B)*

1. Name of Firm or Individual: Haley & Aldrich, Inc

2. Address: 465 Medford Street, Suite 2200

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Boston	MA	02129	617-886-7400	NA

8. Contact Person	9. LSP Number (BWSC Permits only)
Keith E. Johnson	9789

E. Permit - Project Coordination

1. Is this project subject to MEPA review? ☐ yes ☒ no
If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit: NA (EOEA File Number)

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Special Provisions:

1. ☐ **Fee** Exempt: city, town, county, or district of the Commonwealth; federally recognized Indian tribe housing authority; municipal housing authority; the MBTA; or state agency if fee is $100 or less. *There are no fee exemptions for BWSC permits, regardless of applicant status.*
2. ☐ Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. ☐ Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. ☐ Homeowner (according to 310 CMR 4.02).

Reviewer:

Check Number	Dollar Amount	Date
303583	$500.00	3/11/2022

APPENDIX C

Laboratory Data Reports

ANALYTICAL REPORT

Lab Number:	L2130256
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Abby Kerrigan
Phone:	(617) 886-7400
Project Name:	RESERVOIR WOODS EAST-NEW DEVEL
Project Number:	135544-003
Report Date:	06/15/21

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: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003

Lab Number: L2130256
Report Date: 06/15/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2130256-01	2021-0604-BROOK	WATER	40, 50, 60 SYLVAN STREET, WALTHAM, MA	06/04/21 13:00	06/04/21
L2130256-02	2021-0604-HA20-6(OW)	WATER	40, 50, 60 SYLVAN STREET, WALTHAM, MA	06/04/21 12:00	06/04/21
L2130256-03	2021-0604-HA21-20(OW)	WATER	40, 50, 60 SYLVAN STREET, WALTHAM, MA	06/04/21 09:10	06/04/21
L2130256-04	FIELD BLANK	WATER	40, 50, 60 SYLVAN STREET, WALTHAM, MA	06/04/21 12:30	06/04/21

Project Name:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

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:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

Case Narrative (continued)

Report Submission

June 15, 2021: This final report includes the results of all requested analyses.

June 14, 2021: This is a preliminary report.

The analysis of Ethanol 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.

Perfluorinated Alkyl Acids by Isotope Dilution

L2130256-02 and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

Total Metals

L2130256-01, -02, and -03: The sample has elevated detection limits for the metals analyzed by Method 200.8 due to the dilution required by the sample matrix.

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

Authorized Signature:  Cristin Walker

Title: Technical Director/Representative Date: 06/15/21

ORGANICS

VOLATILES

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02 Date Collected: 06/04/21 12:00
Client ID: 2021-0604-HA20-6(OW) Date Received: 06/04/21
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 06/08/21 13:49
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethane	ND		ug/l	1.5	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.5	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	1.5	--	1
1,1,1-Trichloroethane	ND		ug/l	2.0	--	1
Benzene	ND		ug/l	1.0	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	1.7		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	5.0	--	1
1,3-Dichlorobenzene	ND		ug/l	5.0	--	1
1,4-Dichlorobenzene	ND		ug/l	5.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
Acetone	ND		ug/l	10	--	1
Methyl tert butyl ether	ND		ug/l	10	--	1
Tert-Butyl Alcohol	ND		ug/l	100	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	1

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02 Date Collected: 06/04/21 12:00

Client ID: 2021-0604-HA20-6(OW) Date Received: 06/04/21

Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	99		60-140
Fluorobenzene	94		60-140
4-Bromofluorobenzene	88		60-140

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1-SIM
Analytical Date: 06/08/21 13:49
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	5.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	94		60-140
4-Bromofluorobenzene	97		60-140

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Lab Number: L2130256
Project Number: 135544-003
Report Date: 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 06/07/21 16:44
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 06/07/21 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03 Date Collected: 06/04/21 09:10
Client ID: 2021-0604-HA21-20(OW) Date Received: 06/04/21
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 06/08/21 14:27
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethane	ND		ug/l	1.5	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.5	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	1.5	--	1
1,1,1-Trichloroethane	ND		ug/l	2.0	--	1
Benzene	ND		ug/l	1.0	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	5.0	--	1
1,3-Dichlorobenzene	ND		ug/l	5.0	--	1
1,4-Dichlorobenzene	ND		ug/l	5.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
Acetone	ND		ug/l	10	--	1
Methyl tert butyl ether	ND		ug/l	10	--	1
Tert-Butyl Alcohol	ND		ug/l	100	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	1

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03 Date Collected: 06/04/21 09:10

Client ID: 2021-0604-HA21-20(OW) Date Received: 06/04/21

Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	101		60-140
Fluorobenzene	93		60-140
4-Bromofluorobenzene	88		60-140

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03 Date Collected: 06/04/21 09:10
Client ID: 2021-0604-HA21-20(OW) Date Received: 06/04/21
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1-SIM
Analytical Date: 06/08/21 14:27
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	5.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	95		60-140
4-Bromofluorobenzene	97		60-140

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Lab Number: L2130256
Project Number: 135544-003
Report Date: 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 06/08/21 18:47
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 06/08/21 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 06/07/21 15:29
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 06/07/21 12:34

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 02 Batch: WG1508472-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 06/08/21 07:59
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG1508998-4					
Methylene chloride	ND		ug/l	1.0	--
1,1-Dichloroethane	ND		ug/l	1.5	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.5	--
Tetrachloroethene	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	1.5	--
1,1,1-Trichloroethane	ND		ug/l	2.0	--
Benzene	ND		ug/l	1.0	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--
1,2-Dichlorobenzene	ND		ug/l	5.0	--
1,3-Dichlorobenzene	ND		ug/l	5.0	--
1,4-Dichlorobenzene	ND		ug/l	5.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
Acetone	ND		ug/l	10	--
Methyl tert butyl ether	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	100	--
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 06/08/21 07:59
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG1508998-4					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	99		60-140
Fluorobenzene	93		60-140
4-Bromofluorobenzene	91		60-140

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 06/08/21 17:31
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 06/08/21 16:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 03 Batch: WG1509225-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1-SIM
Analytical Date: 06/08/21 07:59
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02-03 Batch: WG1510208-4					
1,4-Dioxane	ND		ug/l	5.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	94		60-140
4-Bromofluorobenzene	98		60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 02		Batch: WG1508472-2						
1,2-Dibromoethane	111		-		80-120	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG1508998-3								
Methylene chloride	90		-		60-140	-		28
1,1-Dichloroethane	95		-		50-150	-		49
Carbon tetrachloride	95		-		70-130	-		41
1,1,2-Trichloroethane	95		-		70-130	-		45
Tetrachloroethene	100		-		70-130	-		39
1,2-Dichloroethane	90		-		70-130	-		49
1,1,1-Trichloroethane	95		-		70-130	-		36
Benzene	95		-		65-135	-		61
Toluene	110		-		70-130	-		41
Ethylbenzene	100		-		60-140	-		63
Vinyl chloride	55		-		5-195	-		66
1,1-Dichloroethene	75		-		50-150	-		32
cis-1,2-Dichloroethene	95		-		60-140	-		30
Trichloroethene	90		-		65-135	-		48
1,2-Dichlorobenzene	95		-		65-135	-		57
1,3-Dichlorobenzene	95		-		70-130	-		43
1,4-Dichlorobenzene	95		-		65-135	-		57
p/m-Xylene	98		-		60-140	-		30
o-xylene	95		-		60-140	-		30
Acetone	88		-		40-160	-		30
Methyl tert butyl ether	80		-		60-140	-		30
Tert-Butyl Alcohol	98		-		60-140	-		30
Tertiary-Amyl Methyl Ether	70		-		60-140	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG1508998-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	97				60-140
Fluorobenzene	91				60-140
4-Bromofluorobenzene	93				60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 03		Batch: WG1509225-2						
1,2-Dibromoethane	113		-		80-120	-			A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-03 Batch: WG1510208-3								
1,4-Dioxane	102		-		60-140	-		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Fluorobenzene	92				60-140
4-Bromofluorobenzene	100				60-140

Matrix Spike Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 02	QC Batch ID: WG1508472-3	QC Sample: L2128363-06	Client ID: MS Sample									
1,2-Dibromoethane	ND	0.25	0.256	102		-	-		80-120	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.25	0.252	101		-	-		80-120	-		20	A
1,2,3-Trichloropropane	ND	0.25	0.307	**123**	Q	-	-		80-120	-		20	A

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 03	QC Batch ID: WG1509225-3	QC Sample: L2129318-02	Client ID: MS Sample									
1,2-Dibromoethane	ND	0.244	0.291	119		-	-		80-120	-		20	A
1,2-Dibromo-3-chloropropane	ND	0.244	0.235	96		-	-		80-120	-		20	A
1,2,3-Trichloropropane	ND	0.244	0.326	**134**	Q	-	-		80-120	-		20	A

SEMIVOLATILES

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1
Analytical Date: 06/09/21 17:04
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 06/07/21 18:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--	1
Butyl benzyl phthalate	ND		ug/l	5.00	--	1
Di-n-butylphthalate	ND		ug/l	5.00	--	1
Di-n-octylphthalate	ND		ug/l	5.00	--	1
Diethyl phthalate	ND		ug/l	5.00	--	1
Dimethyl phthalate	ND		ug/l	5.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		42-122
2-Fluorobiphenyl	65		46-121
4-Terphenyl-d14	84		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 06/09/21 14:55
Analyst: JJW

Extraction Method: EPA 625.1
Extraction Date: 06/07/21 18:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.100	--	1
Fluoranthene	ND		ug/l	0.100	--	1
Naphthalene	ND		ug/l	0.100	--	1
Benzo(a)anthracene	ND		ug/l	0.100	--	1
Benzo(a)pyrene	ND		ug/l	0.100	--	1
Benzo(b)fluoranthene	ND		ug/l	0.100	--	1
Benzo(k)fluoranthene	ND		ug/l	0.100	--	1
Chrysene	ND		ug/l	0.100	--	1
Acenaphthylene	ND		ug/l	0.100	--	1
Anthracene	ND		ug/l	0.100	--	1
Benzo(ghi)perylene	ND		ug/l	0.100	--	1
Fluorene	ND		ug/l	0.100	--	1
Phenanthrene	ND		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--	1
Pyrene	ND		ug/l	0.100	--	1
Pentachlorophenol	ND		ug/l	1.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	33		25-87
Phenol-d6	23		16-65
Nitrobenzene-d5	72		42-122
2-Fluorobiphenyl	69		46-121
2,4,6-Tribromophenol	95		45-128
4-Terphenyl-d14	70		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/12/21 05:22
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 06/08/21 04:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluoroheptanoic Acid (PFHpA)	5.52		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	3.80		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	23.5		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	76.2		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**61**	Q	62-124

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1
Analytical Date: 06/09/21 17:26
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 06/07/21 18:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--	1
Butyl benzyl phthalate	ND		ug/l	5.00	--	1
Di-n-butylphthalate	ND		ug/l	5.00	--	1
Di-n-octylphthalate	ND		ug/l	5.00	--	1
Diethyl phthalate	ND		ug/l	5.00	--	1
Dimethyl phthalate	ND		ug/l	5.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		42-122
2-Fluorobiphenyl	64		46-121
4-Terphenyl-d14	75		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 06/09/21 15:11
Analyst: JJW

Extraction Method: EPA 625.1
Extraction Date: 06/07/21 18:59

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.100	--	1
Fluoranthene	ND		ug/l	0.100	--	1
Naphthalene	ND		ug/l	0.100	--	1
Benzo(a)anthracene	ND		ug/l	0.100	--	1
Benzo(a)pyrene	ND		ug/l	0.100	--	1
Benzo(b)fluoranthene	ND		ug/l	0.100	--	1
Benzo(k)fluoranthene	ND		ug/l	0.100	--	1
Chrysene	ND		ug/l	0.100	--	1
Acenaphthylene	ND		ug/l	0.100	--	1
Anthracene	ND		ug/l	0.100	--	1
Benzo(ghi)perylene	ND		ug/l	0.100	--	1
Fluorene	ND		ug/l	0.100	--	1
Phenanthrene	ND		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--	1
Pyrene	ND		ug/l	0.100	--	1
Pentachlorophenol	ND		ug/l	1.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		25-87
Phenol-d6	28		16-65
Nitrobenzene-d5	92		42-122
2-Fluorobiphenyl	74		46-121
2,4,6-Tribromophenol	94		45-128
4-Terphenyl-d14	70		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/12/21 05:39
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 06/08/21 04:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluoroheptanoic Acid (PFHpA)	2.24		ng/l	1.81	--	1
Perfluorohexanesulfonic Acid (PFHxS)	3.55		ng/l	1.81	--	1
Perfluorooctanoic Acid (PFOA)	13.2		ng/l	1.81	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	--	1
Perfluorooctanesulfonic Acid (PFOS)	50.1		ng/l	1.81	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	60		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	**57**	Q	62-124

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-04
Client ID: FIELD BLANK
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:30
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/12/21 05:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 06/08/21 04:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		62-124

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1
Analytical Date: 06/07/21 15:35
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 06/06/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG1508294-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--
Butyl benzyl phthalate	ND		ug/l	5.00	--
Di-n-butylphthalate	ND		ug/l	5.00	--
Di-n-octylphthalate	ND		ug/l	5.00	--
Diethyl phthalate	ND		ug/l	5.00	--
Dimethyl phthalate	ND		ug/l	5.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		42-122
2-Fluorobiphenyl	64		46-121
4-Terphenyl-d14	74		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1-SIM
Analytical Date: 06/07/21 17:13
Analyst: JJW

Extraction Method: EPA 625.1
Extraction Date: 06/06/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02-03 Batch: WG1508295-1					
Acenaphthene	ND		ug/l	0.100	--
Fluoranthene	ND		ug/l	0.100	--
Naphthalene	ND		ug/l	0.100	--
Benzo(a)anthracene	ND		ug/l	0.100	--
Benzo(a)pyrene	ND		ug/l	0.100	--
Benzo(b)fluoranthene	ND		ug/l	0.100	--
Benzo(k)fluoranthene	ND		ug/l	0.100	--
Chrysene	ND		ug/l	0.100	--
Acenaphthylene	ND		ug/l	0.100	--
Anthracene	ND		ug/l	0.100	--
Benzo(ghi)perylene	ND		ug/l	0.100	--
Fluorene	ND		ug/l	0.100	--
Phenanthrene	ND		ug/l	0.100	--
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--
Pyrene	ND		ug/l	0.100	--
Pentachlorophenol	ND		ug/l	1.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		25-87
Phenol-d6	33		16-65
Nitrobenzene-d5	83		42-122
2-Fluorobiphenyl	79		46-121
2,4,6-Tribromophenol	96		45-128
4-Terphenyl-d14	96		47-138

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/08/21 19:44
Analyst: MP

Extraction Method: ALPHA 23528
Extraction Date: 06/08/21 04:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02-04 Batch: WG1508815-1					
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	127		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		22-136

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG1508294-2								
Bis(2-ethylhexyl)phthalate	96		-		29-137	-		82
Butyl benzyl phthalate	96		-		1-140	-		60
Di-n-butylphthalate	91		-		8-120	-		47
Di-n-octylphthalate	99		-		19-132	-		69
Diethyl phthalate	90		-		1-120	-		100
Dimethyl phthalate	93		-		1-120	-		183

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	83				42-122
2-Fluorobiphenyl	85				46-121
4-Terphenyl-d14	93				47-138

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-03 Batch: WG1508295-3								
Acenaphthene	99		-		60-132	-		30
Fluoranthene	114		-		43-121	-		30
Naphthalene	92		-		36-120	-		30
Benzo(a)anthracene	114		-		42-133	-		30
Benzo(a)pyrene	121		-		32-148	-		30
Benzo(b)fluoranthene	124		-		42-140	-		30
Benzo(k)fluoranthene	115		-		25-146	-		30
Chrysene	110		-		44-140	-		30
Acenaphthylene	106		-		54-126	-		30
Anthracene	111		-		43-120	-		30
Benzo(ghi)perylene	115		-		1-195	-		30
Fluorene	105		-		70-120	-		30
Phenanthrene	106		-		65-120	-		30
Dibenzo(a,h)anthracene	118		-		1-200	-		30
Indeno(1,2,3-cd)pyrene	119		-		1-151	-		30
Pyrene	113		-		70-120	-		30
Pentachlorophenol	99		-		38-152	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-03 Batch: WG1508295-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	62				25-87
Phenol-d6	42				16-65
Nitrobenzene-d5	103				42-122
2-Fluorobiphenyl	95				46-121
2,4,6-Tribromophenol	123				45-128
4-Terphenyl-d14	109				47-138

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 Batch: WG1508815-2								
Perfluoroheptanoic Acid (PFHpA)	102		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	104		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	106		-		63-159	-		30
Perfluorononanoic Acid (PFNA)	110		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	102		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	94		-		63-171	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	126				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97				22-136

Matrix Spike Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1508815-3 WG1508815-4 QC Sample: L2129698-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.1	40.2	108		40.9	108		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	ND	36.1	38.3	104		39.3	105		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32	35.6	108		36.6	108		65-157	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	33.8	38.7	115		39.5	114		37-219	2		30
Perfluorohexanoic Acid (PFHxA)	ND	36.1	38.2	103		39.7	105		69-168	4		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	33.9	34.8	102		34.6	99		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.1	38.2	105		38.9	105		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33	36.5	108		37.1	107		69-177	2		30
Perfluorooctanoic Acid (PFOA)	ND	36.1	40.5	109		42.8	113		63-159	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.4	37.4	109		37.8	108		49-187	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.4	34.0	99		33.9	96		61-179	0		30
Perfluorononanoic Acid (PFNA)	ND	36.1	42.3	117		42.0	114		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.5	35.6	106		36.5	107		52-151	2		30
Perfluorodecanoic Acid (PFDA)	ND	36.1	40.1	111		38.8	105		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	34.6	43.6	126		42.4	120		56-173	3		30
Perfluorononanesulfonic Acid (PFNS)	ND	34.7	38.8	112		41.3	116		48-150	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.1	38.7	107		36.5	99		60-166	6		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.1	42.3	117		43.6	118		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	ND	34.8	31.9	92		35.2	99		38-156	10		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.1	41.9	116		38.5	104		45-170	8		30
Perfluorododecanoic Acid (PFDoA)	ND	36.1	41.6	115		40.4	109		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	ND	36.1	50.5	140		49.7	135		48-158	2		30

Matrix Spike Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1508815-3 WG1508815-4 QC Sample: L2129698-02 Client ID: MS Sample												
Perfluorotetradecanoic Acid (PFTA)	ND	36.1	45.8	127		50.1	136		59-182	9		30

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	123		119		10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**172**	Q	**149**	Q	12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**149**	Q	129		14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		57		27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		65		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		83		55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		70		62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		69		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		68		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		81		71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		75		22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		93		62-163
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		85		69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		68		62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		71		59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		84		70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02-04 QC Batch ID: WG1508815-3 WG1508815-4 QC Sample: L2129698-02 Client ID: MS Sample												
Perfluorooctanesulfonamide (FOSA)	ND	36.1	34.3F	95		35.4	96		46-170	18		30

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		61		10-112

PCBS

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 06/11/21 12:55
Analyst: JAW

Extraction Method: EPA 608.3
Extraction Date: 06/11/21 03:16
Cleanup Method: EPA 3665A
Cleanup Date: 06/11/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	--	1	A
Aroclor 1221	ND		ug/l	0.250	--	1	A
Aroclor 1232	ND		ug/l	0.250	--	1	A
Aroclor 1242	ND		ug/l	0.250	--	1	A
Aroclor 1248	ND		ug/l	0.250	--	1	A
Aroclor 1254	ND		ug/l	0.250	--	1	A
Aroclor 1260	ND		ug/l	0.200	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		37-123	B
Decachlorobiphenyl	77		38-114	B
2,4,5,6-Tetrachloro-m-xylene	71		37-123	A
Decachlorobiphenyl	78		38-114	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA

Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 06/11/21 13:03
Analyst: JAW

Extraction Method: EPA 608.3
Extraction Date: 06/11/21 03:16
Cleanup Method: EPA 3665A
Cleanup Date: 06/11/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	--	1	A
Aroclor 1221	ND		ug/l	0.250	--	1	A
Aroclor 1232	ND		ug/l	0.250	--	1	A
Aroclor 1242	ND		ug/l	0.250	--	1	A
Aroclor 1248	ND		ug/l	0.250	--	1	A
Aroclor 1254	ND		ug/l	0.250	--	1	A
Aroclor 1260	ND		ug/l	0.200	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		37-123	B
Decachlorobiphenyl	71		38-114	B
2,4,5,6-Tetrachloro-m-xylene	60		37-123	A
Decachlorobiphenyl	74		38-114	A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 127,608.3
Analytical Date: 06/11/21 11:45
Analyst: CW

Extraction Method: EPA 608.3
Extraction Date: 06/11/21 03:16
Cleanup Method: EPA 3665A
Cleanup Date: 06/11/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02-03 Batch: WG1510672-1						
Aroclor 1016	ND		ug/l	0.250	--	A
Aroclor 1221	ND		ug/l	0.250	--	A
Aroclor 1232	ND		ug/l	0.250	--	A
Aroclor 1242	ND		ug/l	0.250	--	A
Aroclor 1248	ND		ug/l	0.250	--	A
Aroclor 1254	ND		ug/l	0.250	--	A
Aroclor 1260	ND		ug/l	0.200	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		37-123	B
Decachlorobiphenyl	81		38-114	B
2,4,5,6-Tetrachloro-m-xylene	80		37-123	A
Decachlorobiphenyl	86		38-114	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02-03 Batch: WG1510672-2									
Aroclor 1016	84		-		50-140	-		36	A
Aroclor 1260	87		-		8-140	-		38	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77				37-123	B
Decachlorobiphenyl	71				38-114	B
2,4,5,6-Tetrachloro-m-xylene	75				37-123	A
Decachlorobiphenyl	72				38-114	A

METALS

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-01 Date Collected: 06/04/21 13:00

Client ID: 2021-0604-BROOK Date Received: 06/04/21

Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, 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 Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.02000	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00100	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Chromium, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Copper, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Iron, Total	0.128		mg/l	0.050	--	1	06/08/21 10:41	06/09/21 20:21	EPA 3005A	19,200.7	SV
Lead, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Mercury, Total	ND		mg/l	0.00020	--	1	06/08/21 11:45	06/10/21 13:17	EPA 245.1	3,245.1	OU
Nickel, Total	ND		mg/l	0.01000	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Selenium, Total	ND		mg/l	0.02500	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Silver, Total	ND		mg/l	0.00200	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Zinc, Total	ND		mg/l	0.05000	--	5	06/08/21 10:41	06/10/21 14:07	EPA 3005A	3,200.8	CD
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	104		mg/l	0.660	NA	1	06/08/21 10:41	06/09/21 20:21	EPA 3005A	19,200.7	SV
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		06/10/21 14:07	NA	107,-	

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02 Date Collected: 06/04/21 12:00

Client ID: 2021-0604-HA20-6(OW) Date Received: 06/04/21

Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, 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 Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.02000	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00100	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Chromium, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Copper, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Iron, Total	0.241		mg/l	0.050	--	1	06/08/21 10:41	06/09/21 20:26	EPA 3005A	19,200.7	SV
Lead, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Mercury, Total	ND		mg/l	0.00020	--	1	06/08/21 11:45	06/10/21 13:21	EPA 245.1	3,245.1	OU
Nickel, Total	ND		mg/l	0.01000	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Selenium, Total	ND		mg/l	0.02500	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Silver, Total	ND		mg/l	0.00200	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
Zinc, Total	ND		mg/l	0.05000	--	5	06/08/21 10:41	06/10/21 14:11	EPA 3005A	3,200.8	CD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		06/10/21 14:11	NA	107,-	

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03 Date Collected: 06/04/21 09:10

Client ID: 2021-0604-HA21-20(OW) Date Received: 06/04/21

Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, 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 Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.02000	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00100	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Chromium, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Copper, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Iron, Total	ND		mg/l	0.050	--	1	06/08/21 10:41	06/09/21 21:19	EPA 3005A	19,200.7	SV
Lead, Total	ND		mg/l	0.00500	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Mercury, Total	ND		mg/l	0.00020	--	1	06/08/21 11:45	06/10/21 13:24	EPA 245.1	3,245.1	OU
Nickel, Total	ND		mg/l	0.01000	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Selenium, Total	ND		mg/l	0.02500	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Silver, Total	ND		mg/l	0.00200	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
Zinc, Total	ND		mg/l	0.05000	--	5	06/08/21 10:41	06/10/21 12:23	EPA 3005A	3,200.8	CD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		06/10/21 12:23	NA	107,-	

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1508732-1										
Iron, Total	ND		mg/l	0.050	--	1	06/08/21 10:41	06/09/21 15:48	19,200.7	SV

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: WG1508732-1										
Hardness	ND		mg/l	0.660	NA	1	06/08/21 10:41	06/09/21 15:48	19,200.7	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1508735-1										
Antimony, Total	ND		mg/l	0.00400	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00100	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00020	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Chromium, Total	ND		mg/l	0.00100	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Copper, Total	ND		mg/l	0.00100	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Lead, Total	ND		mg/l	0.00100	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Nickel, Total	ND		mg/l	0.00200	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Selenium, Total	ND		mg/l	0.00500	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Silver, Total	ND		mg/l	0.00040	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD
Zinc, Total	ND		mg/l	0.01000	--	1	06/08/21 10:41	06/09/21 18:24	3,200.8	CD

Prep Information

Digestion Method: EPA 3005A

Project Name: RESERVOIR WOODS EAST-NEW DEVEL **Lab Number:** L2130256

Project Number: 135544-003 **Report Date:** 06/15/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1508736-1										
Mercury, Total	ND		mg/l	0.00020	--	1	06/08/21 11:45	06/10/21 12:15	3,245.1	OU

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1508732-2								
Iron, Total	102		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-03 Batch: WG1508732-2								
Hardness	102		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1508735-2								
Antimony, Total	86		-		85-115	-		
Arsenic, Total	102		-		85-115	-		
Cadmium, Total	107		-		85-115	-		
Chromium, Total	108		-		85-115	-		
Copper, Total	108		-		85-115	-		
Lead, Total	103		-		85-115	-		
Nickel, Total	105		-		85-115	-		
Selenium, Total	102		-		85-115	-		
Silver, Total	101		-		85-115	-		
Zinc, Total	113		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1508736-2								
Mercury, Total	92		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-3 QC Sample: L2129493-01 Client ID: MS Sample												
Iron, Total	0.550	1	1.54	99		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-3 QC Sample: L2129493-01 Client ID: MS Sample												
Hardness	397	66.2	460	95		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-7 QC Sample: L2129493-02 Client ID: MS Sample												
Iron, Total	0.110	1	1.10	99		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-7 QC Sample: L2129493-02 Client ID: MS Sample												
Hardness	284	66.2	363	119		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508735-3 QC Sample: L2129493-01 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.4755	95		-	-		70-130	-		20
Arsenic, Total	0.00132	0.12	0.1208	100		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05280	104		-	-		70-130	-		20
Chromium, Total	0.00336	0.2	0.2244	110		-	-		70-130	-		20
Copper, Total	0.00525	0.25	0.2760	108		-	-		70-130	-		20
Lead, Total	0.01140	0.51	0.5284	101		-	-		70-130	-		20
Nickel, Total	0.00236	0.5	0.5128	102		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1083	90		-	-		70-130	-		20
Silver, Total	ND	0.05	0.05192	104		-	-		70-130	-		20
Zinc, Total	0.01955	0.5	0.5719	110		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003

Lab Number: L2130256
Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508735-5 QC Sample: L2129493-02 Client ID: MS Sample										
Antimony, Total	ND	0.5	0.2658	**53**	Q	-	-	70-130	-	20
Arsenic, Total	ND	0.12	0.1239	103		-	-	70-130	-	20
Cadmium, Total	ND	0.051	0.05307	104		-	-	70-130	-	20
Chromium, Total	0.00507	0.2	0.2201	108		-	-	70-130	-	20
Copper, Total	0.00107	0.25	0.2692	107		-	-	70-130	-	20
Lead, Total	0.00167	0.51	0.5148	101		-	-	70-130	-	20
Nickel, Total	0.00224	0.5	0.5092	101		-	-	70-130	-	20
Selenium, Total	ND	0.12	0.1208	101		-	-	70-130	-	20
Silver, Total	ND	0.05	0.05229	104		-	-	70-130	-	20
Zinc, Total	0.01321	0.5	0.5646	110		-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508736-3 QC Sample: L2130234-01 Client ID: MS Sample										
Mercury, Total	ND	0.005	0.00481	96		-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508736-5 QC Sample: L2130234-02 Client ID: MS Sample										
Mercury, Total	ND	0.005	0.00491	98		-	-	70-130	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-4 QC Sample: L2129493-01 Client ID: DUP Sample						
Iron, Total	0.550	0.570	mg/l	4		20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508732-8 QC Sample: L2129493-02 Client ID: DUP Sample						
Iron, Total	0.110	0.115	mg/l	4		20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508735-4 QC Sample: L2129493-01 Client ID: DUP Sample						
Antimony, Total	ND	0.00558	mg/l	NC		20
Arsenic, Total	0.00132	0.00128	mg/l	3		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00336	0.00329	mg/l	2		20
Copper, Total	0.00525	0.00506	mg/l	4		20
Lead, Total	0.01140	0.01141	mg/l	0		20
Nickel, Total	0.00236	0.00219	mg/l	7		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.01955	0.01956	mg/l	0		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508735-6 QC Sample: L2129493-02 Client ID: DUP Sample					
Antimony, Total	ND	ND	mg/l	NC	20
Arsenic, Total	ND	ND	mg/l	NC	20
Cadmium, Total	ND	ND	mg/l	NC	20
Chromium, Total	0.00507	0.00470	mg/l	8	20
Copper, Total	0.00107	0.00102	mg/l	6	20
Lead, Total	0.00167	0.00163	mg/l	3	20
Nickel, Total	0.00224	0.00202	mg/l	11	20
Selenium, Total	ND	ND	mg/l	NC	20
Silver, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.01321	0.01218	mg/l	8	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508736-4 QC Sample: L2130234-01 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1508736-6 QC Sample: L2130234-02 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-01
Client ID: 2021-0604-BROOK
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA
Sample Depth:
Matrix: Water

Date Collected: 06/04/21 13:00
Date Received: 06/04/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Cyanide, Total	ND		mg/l	0.005	--	1	06/09/21 20:10	06/10/21 11:51	121,4500CN-CE	CR
pH (H)	6.9		SU	-	NA	1	-	06/08/21 04:45	121,4500H+-B	KA
Nitrogen, Ammonia	0.139		mg/l	0.075	--	1	06/09/21 12:30	06/09/21 20:54	121,4500NH3-BH	AT
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/05/21 08:12	06/05/21 08:24	1,7196A	AW

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-02
Client ID: 2021-0604-HA20-6(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA
Date Collected: 06/04/21 12:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	6.1		mg/l	5.0	NA	1	-	06/09/21 13:20	121,2540D	AC
Cyanide, Total	ND		mg/l	0.005	--	1	06/09/21 20:10	06/10/21 11:54	121,4500CN-CE	CR
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/05/21 08:44	121,4500CL-D	AW
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/09/21 12:30	06/09/21 20:55	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	3.60	--	.9	06/09/21 16:00	06/09/21 17:00	74,1664A	IR
Phenolics, Total	ND		mg/l	0.030	--	1	06/07/21 07:30	06/07/21 10:59	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/05/21 08:12	06/05/21 08:24	1,7196A	AW
Anions by Ion Chromatography - Westborough Lab										
Chloride	1700		mg/l	50.0	--	100	-	06/09/21 22:18	44,300.0	SH

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

SAMPLE RESULTS

Lab ID: L2130256-03
Client ID: 2021-0604-HA21-20(OW)
Sample Location: 40, 50, 60 SYLVAN STREET, WALTHAM, MA
Date Collected: 06/04/21 09:10
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	06/09/21 13:20	121,2540D	AC
Cyanide, Total	ND		mg/l	0.005	--	1	06/09/21 20:10	06/10/21 11:56	121,4500CN-CE	CR
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/05/21 08:44	121,4500CL-D	AW
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/09/21 12:30	06/09/21 20:56	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	06/09/21 16:00	06/09/21 17:00	74,1664A	IR
Phenolics, Total	ND		mg/l	0.030	--	1	06/09/21 07:20	06/10/21 08:00	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/05/21 08:12	06/05/21 08:24	1,7196A	AW
Anions by Ion Chromatography - Westborough Lab										
Chloride	298.		mg/l	5.00	--	10	-	06/10/21 00:09	44,300.0	SH

Project Name: RESERVOIR WOODS EAST-NEW DEV
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

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: WG1508002-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	06/05/21 08:12	06/05/21 08:23	1,7196A	AW
General Chemistry - Westborough Lab for sample(s): 02-03 Batch: WG1508005-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	06/05/21 08:44	121,4500CL-D	AW
General Chemistry - Westborough Lab for sample(s): 02 Batch: WG1508332-1										
Phenolics, Total	ND		mg/l	0.030	--	1	06/07/21 07:30	06/07/21 10:50	4,420.1	KP
General Chemistry - Westborough Lab for sample(s): 03 Batch: WG1509480-1										
Phenolics, Total	ND		mg/l	0.030	--	1	06/09/21 07:20	06/10/21 09:42	4,420.1	KP
General Chemistry - Westborough Lab for sample(s): 02-03 Batch: WG1509748-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	06/09/21 13:20	121,2540D	AC
General Chemistry - Westborough Lab for sample(s): 02-03 Batch: WG1509762-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	06/09/21 16:00	06/09/21 17:00	74,1664A	IR
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1509787-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/09/21 12:30	06/09/21 20:23	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1510009-1										
Cyanide, Total	ND		mg/l	0.005	--	1	06/09/21 20:10	06/10/21 11:24	121,4500CN-CE	CR
Anions by Ion Chromatography - Westborough Lab for sample(s): 02-03 Batch: WG1510041-1										
Chloride	ND		mg/l	0.500	--	1	-	06/09/21 18:50	44,300.0	SH

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1508002-2								
Chromium, Hexavalent	104		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 02-03 Batch: WG1508005-2								
Chlorine, Total Residual	96		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 02 Batch: WG1508332-2								
Phenolics, Total	112		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1508825-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 03 Batch: WG1509480-2								
Phenolics, Total	114		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 02-03 Batch: WG1509748-2								
Solids, Total Suspended	99		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 02-03 Batch: WG1509762-2								
TPH	76		-		64-132	-		34

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1509787-2					
Nitrogen, Ammonia	98	-	80-120	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1510009-2					
Cyanide, Total	90	-	90-110	-	
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 02-03 Batch: WG1510041-2					
Chloride	104	-	90-110	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1508002-4 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)												
Chromium, Hexavalent	ND	0.1	0.095	95		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1508005-4 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)												
Chlorine, Total Residual	ND	0.25	0.30	120		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1508332-4 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)												
Phenolics, Total	ND	0.4	0.32	80		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1509480-4 QC Sample: L2130256-03 Client ID: 2021-0604-HA21-20(OW)												
Phenolics, Total	ND	0.4	0.38	96		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1509762-4 QC Sample: L2128935-02 Client ID: MS Sample												
TPH	ND	21.1	14.5	69		-	-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1509787-4 QC Sample: L2130218-01 Client ID: MS Sample												
Nitrogen, Ammonia	3.07	4	6.93	96		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1510009-4 QC Sample: L2130256-01 Client ID: 2021-0604-BROOK												
Cyanide, Total	ND	0.2	0.190	95		-	-		90-110	-		30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1510041-3 QC Sample: L2127337-01 Client ID: MS Sample												
Chloride	22.2	4	25.5	**82**	Q	-	-		90-110	-		18

Lab Duplicate Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1508002-3 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1508005-3 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1508332-3 QC Sample: L2130256-02 Client ID: 2021-0604-HA20-6(OW)						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1508825-2 QC Sample: L2130373-01 Client ID: DUP Sample						
pH	7.1	7.2	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1509480-3 QC Sample: L2130256-03 Client ID: 2021-0604-HA21-20(OW)						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1509748-3 QC Sample: L2129904-02 Client ID: DUP Sample						
Solids, Total Suspended	190	160	mg/l	17		29
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1509762-3 QC Sample: L2128935-01 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1509787-3 QC Sample: L2130218-01 Client ID: DUP Sample						
Nitrogen, Ammonia	3.07	3.32	mg/l	8		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST-NEW DEVEL

Project Number: 135544-003

Lab Number: L2130256

Report Date: 06/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1510009-3 QC Sample: L2130256-01 Client ID: 2021-0604-BROOK					
Cyanide, Total	ND	ND	mg/l	NC	30
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1510041-4 QC Sample: L2127337-01 Client ID: DUP Sample					
Chloride	22.2	22.4	mg/l	1	18

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003

Lab Number: L2130256
Report Date: 06/15/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
E	Absent
F	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2130256-01A	Plastic 250ml HNO3 preserved	F	<2	<2	3.5	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),HARDU(180),FE-UI(180),CU-2008T(180),AG-2008T(180),AS-2008T(180),SE-2008T(180),HG-U(28),CR-2008T(180),SB-2008T(180),PB-2008T(180)
L2130256-01B	Plastic 250ml unpreserved	F	7	7	3.5	Y	Absent		HEXCR-7196(1),PH-4500(.01)
L2130256-01C	Plastic 250ml H2SO4 preserved	F	<2	<2	3.5	Y	Absent		NH3-4500(28)
L2130256-01D	Plastic 250ml NaOH preserved	F	>12	>12	3.5	Y	Absent		TCN-4500(14)
L2130256-02A	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-02B	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-02C	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-02D	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-02E	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		504(14)
L2130256-02F	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		504(14)
L2130256-02G	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		504(14)
L2130256-02H	Vial Na2S2O3 preserved	B	NA		4.1	Y	Absent		504(14)
L2130256-02I	Vial unpreserved	B	NA		4.1	Y	Absent		SUB-ETHANOL(14)
L2130256-02J	Vial unpreserved	B	NA		4.1	Y	Absent		SUB-ETHANOL(14)
L2130256-02K	Vial unpreserved	B	NA		4.1	Y	Absent		SUB-ETHANOL(14)
L2130256-02L	Plastic 500ml H2SO4 preserved	B	<2	<2	4.1	Y	Absent		NH3-4500(28)
L2130256-02M	Plastic 250ml NaOH preserved	B	>12	>12	4.1	Y	Absent		TCN-4500(14)

*Values in parentheses indicate holding time in days

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003

Lab Number: L2130256
Report Date: 06/15/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2130256-02N	Plastic 250ml HNO3 preserved	B	<2	<2	4.1	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HG-U(28),AG-2008T(180),AS-2008T(180),SE-2008T(180),TRICR-CALC(1),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L2130256-02O	Amber 950ml H2SO4 preserved	B	<2	<2	4.1	Y	Absent		TPHENOL-420(28)
L2130256-02P	Plastic 950ml unpreserved	B	7	7	4.1	Y	Absent		CL-300(28),HEXCR-7196(1),TRC-4500(1)
L2130256-02Q	Plastic 950ml unpreserved	B	7	7	4.1	Y	Absent		TSS-2540(7)
L2130256-02R	Plastic 250ml unpreserved	C	NA		5.8	Y	Absent		A2-537-ISOTOPE(14)
L2130256-02S	Plastic 250ml unpreserved	C	NA		5.8	Y	Absent		A2-537-ISOTOPE(14)
L2130256-02T	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		PCB-608.3(365)
L2130256-02U	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		PCB-608.3(365)
L2130256-02V	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		625.1-RGP(7)
L2130256-02W	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		625.1-RGP(7)
L2130256-02X	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		625.1-SIM-RGP(7)
L2130256-02Y	Amber 1000ml Na2S2O3	B	7	7	4.1	Y	Absent		625.1-SIM-RGP(7)
L2130256-02Z	Amber 1000ml HCl preserved	B	NA		4.1	Y	Absent		TPH-1664(28)
L2130256-02Z1	Amber 1000ml HCl preserved	B	NA		4.1	Y	Absent		TPH-1664(28)
L2130256-03A	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-03B	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-03C	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-03D	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7)
L2130256-03E	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		504(14)
L2130256-03F	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		504(14)
L2130256-03G	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		504(14)
L2130256-03H	Vial Na2S2O3 preserved	E	NA		5.1	Y	Absent		504(14)
L2130256-03I	Vial unpreserved	E	NA		5.1	Y	Absent		SUB-ETHANOL(14)
L2130256-03J	Vial unpreserved	E	NA		5.1	Y	Absent		SUB-ETHANOL(14)
L2130256-03K	Vial unpreserved	E	NA		5.1	Y	Absent		SUB-ETHANOL(14)
L2130256-03L	Plastic 500ml H2SO4 preserved	E	<2	<2	5.1	Y	Absent		NH3-4500(28)

*Values in parentheses indicate holding time in days

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003

Lab Number: L2130256
Report Date: 06/15/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2130256-03M	Plastic 250ml NaOH preserved	E	>12	>12	5.1	Y	Absent		TCN-4500(14)
L2130256-03N	Plastic 250ml HNO3 preserved	E	<2	<2	5.1	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AS-2008T(180),HG-U(28),AG-2008T(180),SE-2008T(180),TRICR-CALC(1),PB-2008T(180),CR-2008T(180),SB-2008T(180)
L2130256-03O	Amber 950ml H2SO4 preserved	E	<2	<2	5.1	Y	Absent		TPHENOL-420(28)
L2130256-03P	Plastic 950ml unpreserved	E	7	7	5.1	Y	Absent		HEXCR-7196(1),CL-300(28),TRC-4500(1)
L2130256-03Q	Plastic 950ml unpreserved	E	7	7	5.1	Y	Absent		TSS-2540(7)
L2130256-03R	Plastic 250ml unpreserved	C	NA		5.8	Y	Absent		A2-537-ISOTOPE(14)
L2130256-03S	Plastic 250ml unpreserved	C	NA		5.8	Y	Absent		A2-537-ISOTOPE(14)
L2130256-03T	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		PCB-608.3(365)
L2130256-03U	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		PCB-608.3(365)
L2130256-03V	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		625.1-RGP(7)
L2130256-03W	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		625.1-RGP(7)
L2130256-03X	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		625.1-SIM-RGP(7)
L2130256-03Y	Amber 1000ml Na2S2O3	E	7	7	5.1	Y	Absent		625.1-SIM-RGP(7)
L2130256-03Z	Amber 1000ml HCl preserved	E	NA		5.1	Y	Absent		TPH-1664(28)
L2130256-03Z1	Amber 1000ml HCl preserved	E	NA		5.1	Y	Absent		TPH-1664(28)
L2130256-04A	Plastic 250ml unpreserved	C	NA		5.8	Y	Absent		A2-537-ISOTOPE(14)

*Values in parentheses indicate holding time in days

Project Name: RESERVOIR WOODS EAST-NEW DEVEL
Project Number: 135544-003
Lab Number: L2130256
Report Date: 06/15/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

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.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

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.

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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

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

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

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

Data Qualifiers

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:	RESERVOIR WOODS EAST-NEW DEVEL	**Lab Number:**	L2130256
Project Number:	135544-003	**Report Date:**	06/15/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

74 Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

107 Alpha Analytical - In-house calculation method.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

127 Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD, EPA 821-R-16-009, December 2016.

128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
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, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

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, EPA 537.1.

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

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Brewer, ME 04412 — Portsmouth, NH 03801 — Mahwah, NJ 07430
Albany, NY 12205
Tonawanda, NY 14150 — Holmes, PA 19043

Page 1 of 1

Date Rec'd in Lab: 6/4/21

ALPHA Job #: L2130296

H&A Information

H&A Client: ARE-MA Region No. 82, LLC
H&A Address: 465 Medford St., Suite 2200
Boston, MA 02129
H&A Phone: 860.986.1875
H&A Fax: rgenovesi@haleyaldrich.com
H&A Email: akerrigan@haleyaldrich.com

Project Information

Project Name: Reservoir Woods East - New Development
Project Location: 40, 50, 60 Sylvan Street, Waltham, MA
Project #: 135544-003
(Use Project name as Project #) ☐
Project Manager: Abby Kerrigan, Rich Genovesi
ALPHAQuote #: BINNEY

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☑ Email ☐ Fax
☑ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other:

Billing Information

☑ Same as Client Info
PO #

Regulatory Requirements (Program/Criteria)

MA GW1

Note: Select State from menu & identify criteria.

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Note 1: Request PFAS 2ng/L (or less) reporting limits

Note 2: Report Ag, As, Cd, Cu, Ni, Pb, Sb, Se, Zn, Fe, Hg, Cn

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Depth	NPDES RGP Package	MCP PFAS (see note 1)	Tri + Hex Chromium	Hardness	pH	Ammonia	Total Metals (see note 2)	Sample Specific Comments	Total Bottles
30296 -01	SRF 2021-0604-Brook	6/4/21	1300	Water	SRF	-			X	X	X	X	X		4
02	2021-0604-HA20-6(OW)	↓	1200	Water		-	X	X							27
03	2021-0604-HA21-20(OW)	↓	9:10	Water	↓	-	X	X							27
04	Field Blank		1230	AQ	↓	-		X							2
														Total Bottle Count:	
Container Type								P	P	P	P	P	P		
Preservative															

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

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

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	6/4/21 1630		6/4/21 1630
	6/MBL 1805		6/4/21 1805

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. Alpha Analytical's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement# 2019-22 Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 3 (1/7/2019)

ALPHA ANALYTICAL
World Class Chemistry

Subcontract Chain of Custody

Tek Lab, Inc.
5445 Horsehoe Lake Road
Collinsville, IL 62234-7425

Alpha Job Number
L2130256

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 603.319.5010
Email: mgulli@alphalab.com

Project Information

Project Location: MA
Project Manager: Melissa Gulli

Turnaround & Deliverables Information

Due Date:
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:

Regulatory Criteria: RCS-1-14

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L2130256

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
	2021-0604-HA20-6(OW)	06-04-21 12:00	WATER	Ethanol by EPA 1671 Revision A	
	2021-0604-HA21-20(OW)	06-04-21 09:10	WATER	Ethanol by EPA 1671 Revision A	

	Relinquished By:	Date/Time:	Received By:	Date/Time:
		6/7/21		
Form No: AL_subcoc				

Teklab, Inc.
Environmental Laboratory

http://www.teklabinc.com/

June 14, 2021

Melissa Gulli
Alpha Analytical
145 Flanders Road
Westborough, MA 01581
TEL: (603) 319-5010
FAX:

Illinois	100226
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: L2130256 **WorkOrder:** 21060493

Dear Melissa Gulli:

TEKLAB, INC received 2 samples on 6/8/2021 10:07:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Teklab, Inc.
Environmental Laboratory

Report Contents

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21060493
Client Project: L2130256
Report Date: 14-Jun-21

This reporting package includes the following:

Teklab, Inc.
Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical **Work Order:** 21060493

Client Project: L2130256 **Report Date:** 14-Jun-21

Abbr	Definition
*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Teklab, Inc. Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical

Work Order: 21060493

Client Project: L2130256

Report Date: 14-Jun-21

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
C -	RL shown is a Client Requested Quantitation Limit	E -	Value above quantitation range
H -	Holding times exceeded	I -	Associated internal standard was outside method criteria
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	T -	TIC(Tentatively identified compound)
X -	Value exceeds Maximum Contaminant Level		

Teklab, Inc.
Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2130256

Work Order: 21060493
Report Date: 14-Jun-21

Cooler Receipt Temp: 2.2 °C

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Teklab, Inc. Environmental Laboratory

Accreditations

http://www.teklabinc.com/

Client: Alpha Analytical

Client Project: L2130256

Work Order: 21060493

Report Date: 14-Jun-21

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2022	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2022	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2022	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2022	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2021	Collinsville
Arkansas	ADEQ	88-0966		3/14/2022	Collinsville
Illinois	IDPH	17584		5/31/2021	Collinsville
Kentucky	UST	0073		1/31/2022	Collinsville
Missouri	MDNR	00930		5/31/2021	Collinsville
Missouri	MDNR	930		1/31/2022	Collinsville

Teklab, Inc. Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21060493
Client Project: L2130256
Report Date: 14-Jun-21
Lab ID: 21060493-001
Client Sample ID: 2021-0604-HA20-6(OW)
Matrix: AQUEOUS
Collection Date: 06/04/2021 12:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS								
Ethanol	*	20		**ND**	mg/L	1	06/10/2021 15:21	R293109

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21060493
Client Project: L2130256
Report Date: 14-Jun-21
Lab ID: 21060493-002
Client Sample ID: 2021-0604-HA21-20(OW)
Matrix: AQUEOUS
Collection Date: 06/04/2021 9:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS								
Ethanol	*	20		**ND**	mg/L	1	06/10/2021 15:59	R293109

Teklab, Inc. Environmental Laboratory

Quality Control Results

http://www.teklabinc.com/

Client: Alpha Analytical **Work Order:** 21060493

Client Project: L2130256 **Report Date:** 14-Jun-21

EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE OR

Batch R293109 **SampType:** MBLK Units **mg/L**

SampID: MBLK-061021

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**ND**						06/10/2021

Batch R293109 **SampType:** LCS Units **mg/L**

SampID: LCS-061021

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**260**	250.0	0	102.6	70	132	06/10/2021

Batch R293109 **SampType:** MS Units **mg/L**

SampID: 21060597-001AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**240**	250.0	0	97.4	70	132	06/10/2021

Batch R293109 **SampType:** MSD Units **mg/L** RPD Limit **30**

SampID: 21060597-001AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Ethanol	*	20		**260**	250.0	0	104.7	243.4	7.23	06/10/2021

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2130256

Work Order: 21060493
Report Date: 14-Jun-21

Carrier: UPS

Received By: ERH

Completed by: Mary E. Kemp
On: 08-Jun-21
Mary E. Kemp

Reviewed by: Elizabeth A. Hurley
On: 08-Jun-21
Elizabeth A. Hurley

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 2.2
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☑	No ☐	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

21060493

ALPHA ANALYTICAL
World Class Chemistry

Subcontract Chain of Custody

Tek Lab, Inc.
5445 Horsehoe Lake Road
Collinsville, IL 62234-7425

Alpha Job Number
L2130256

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 603.319.5010
Email: mgulli@alphalab.com

Project Information

Project Location: MA
Project Manager: Melissa Gulli

Turnaround & Deliverables Information

Due Date:
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:

Regulatory Criteria: RCS-1-14

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L2130256

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com

2.2°C LTG | Ice. OKHS. PAT 6/8/21

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
21060493-001	2021-0604-HA20-6(OW)	06-04-21 12:00	WATER	Ethanol by EPA 1671 Revision A	
	2021-0604-HA21-20(OW)	06-04-21 09:10	WATER	Ethanol by EPA 1671 Revision A	

Relinquished By:	Date/Time:	Received By:	Date/Time:
	6/7/21	(UPS)	6/8/21 1007

Form No: AL_subcoc

PAT 6/8/21

ANALYTICAL REPORT

Lab Number:	L2117917
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Abby Kerrigan
Phone:	(617) 886-7400
Project Name:	RESERVOIR WOODS EAST
Project Number:	135544-003-005-01
Report Date:	04/14/21

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).

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-003-005-01

Lab Number: L2117917
Report Date: 04/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2117917-01	HA21-13(OW)	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/08/21 12:35	04/08/21
L2117917-02	TB-040821	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	03/02/21 09:00	04/08/21

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

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)?	YES

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

L2117917-02: A sample identified as "TB-040821" was received, but not listed on the Chain of Custody. This sample was not analyzed.

Volatile Organics

L2117917-01: Initial calibration utilized a quadratic fit for: bromomethane

In reference to question H:

L2117917-01: Initial Calibration did not meet:

Lowest Calibration Standard Minimum Response Factor: 1,4-dioxane (0.0119)

Average Response Factor: 1,4-dioxane

L2117917-01: The associated continuing calibration standard is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

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: Jennifer L Clements

Title: Technical Director/Representative Date: 04/14/21

QC OUTLIER SUMMARY REPORT

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-003-005-01

Lab Number: L2117917
Report Date: 04/14/21

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: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

SAMPLE RESULTS

Lab ID: L2117917-01 Date Collected: 04/08/21 12:35
Client ID: HA21-13(OW) Date Received: 04/08/21
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/13/21 09:21
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

SAMPLE RESULTS

Lab ID: L2117917-01 Date Collected: 04/08/21 12:35

Client ID: HA21-13(OW) Date Received: 04/08/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

SAMPLE RESULTS

Lab ID: L2117917-01 Date Collected: 04/08/21 12:35

Client ID: HA21-13(OW) Date Received: 04/08/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	120		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/13/21 05:56
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1485569-5					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/13/21 05:56
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1485569-5					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene, Total	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
Methyl ethyl ketone	ND		ug/l	5.0	--
Methyl isobutyl ketone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2117917

Project Number: 135544-003-005-01 **Report Date:** 04/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/13/21 05:56
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1485569-5					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Diethyl ether	ND		ug/l	2.0	--
Diisopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	109		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-003-005-01

Lab Number: L2117917
Report Date: 04/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1485569-3 WG1485569-4								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	110		100		70-130	10		20
Carbon tetrachloride	100		100		70-130	0		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	100		110		70-130	10		20
1,1,2-Trichloroethane	110		110		70-130	0		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	100		100		70-130	0		20
Trichlorofluoromethane	110		100		70-130	10		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	110		100		70-130	10		20
Bromodichloromethane	100		100		70-130	0		20
trans-1,3-Dichloropropene	110		110		70-130	0		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	110		100		70-130	10		20
Bromoform	87		98		70-130	12		20
1,1,2,2-Tetrachloroethane	110		120		70-130	9		20
Benzene	100		100		70-130	0		20
Toluene	110		100		70-130	10		20
Ethylbenzene	110		110		70-130	0		20
Chloromethane	100		98		70-130	2		20
Bromomethane	130		120		70-130	8		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-003-005-01

Lab Number: L2117917

Report Date: 04/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1485569-3 WG1485569-4								
Vinyl chloride	110		100		70-130	10		20
Chloroethane	110		110		70-130	0		20
1,1-Dichloroethene	100		100		70-130	0		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichlorobenzene	96		100		70-130	4		20
1,3-Dichlorobenzene	98		100		70-130	2		20
1,4-Dichlorobenzene	98		100		70-130	2		20
Methyl tert butyl ether	100		100		70-130	0		20
p/m-Xylene	110		105		70-130	5		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	100		100		70-130	0		20
1,2,3-Trichloropropane	110		120		70-130	9		20
Styrene	110		110		70-130	0		20
Dichlorodifluoromethane	88		82		70-130	7		20
Acetone	120		130		70-130	8		20
Carbon disulfide	110		100		70-130	10		20
Methyl ethyl ketone	110		110		70-130	0		20
Methyl isobutyl ketone	99		100		70-130	1		20
2-Hexanone	100		110		70-130	10		20
Bromochloromethane	100		100		70-130	0		20
Tetrahydrofuran	120		120		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-003-005-01

Lab Number: L2117917

Report Date: 04/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1485569-3 WG1485569-4								
2,2-Dichloropropane	110		110		70-130	0		20
1,2-Dibromoethane	110		100		70-130	10		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	100		100		70-130	0		20
Bromobenzene	90		99		70-130	10		20
n-Butylbenzene	100		110		70-130	10		20
sec-Butylbenzene	100		110		70-130	10		20
tert-Butylbenzene	98		110		70-130	12		20
o-Chlorotoluene	100		110		70-130	10		20
p-Chlorotoluene	99		110		70-130	11		20
1,2-Dibromo-3-chloropropane	91		110		70-130	19		20
Hexachlorobutadiene	96		100		70-130	4		20
Isopropylbenzene	96		100		70-130	4		20
p-Isopropyltoluene	98		100		70-130	2		20
Naphthalene	89		98		70-130	10		20
n-Propylbenzene	100		110		70-130	10		20
1,2,3-Trichlorobenzene	93		98		70-130	5		20
1,2,4-Trichlorobenzene	88		97		70-130	10		20
1,3,5-Trimethylbenzene	98		100		70-130	2		20
1,2,4-Trimethylbenzene	97		110		70-130	13		20
Diethyl ether	100		100		70-130	0		20
Diisopropyl Ether	110		110		70-130	0		20
Ethyl-Tert-Butyl-Ether	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-003-005-01

Lab Number: L2117917

Report Date: 04/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1485569-3 WG1485569-4								
Tertiary-Amyl Methyl Ether	97		98		70-130	1		20
1,4-Dioxane	112		104		70-130	7		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		102		70-130
Toluene-d8	107		103		70-130
4-Bromofluorobenzene	94		106		70-130
Dibromofluoromethane	103		98		70-130

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-003-005-01

Lab Number: L2117917
Report Date: 04/14/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
B	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L2117917-01A	Vial HCl preserved	B	NA		3.9	Y	Absent		MCP-8260-10(14)
L2117917-01B	Vial HCl preserved	B	NA		3.9	Y	Absent		MCP-8260-10(14)
L2117917-01C	Vial HCl preserved	B	NA		3.9	Y	Absent		MCP-8260-10(14)
L2117917-02A	Vial HCl preserved	B	NA		3.9	Y	Absent		ARCHIVE()
L2117917-02B	Vial HCl preserved	B	NA		3.9	Y	Absent		ARCHIVE()

Container Comments

L2117917-02B	headspace

*Values in parentheses indicate holding time in days

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

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.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

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.

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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

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

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

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

Data Qualifiers

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2117917
Project Number:	135544-003-005-01	**Report Date:**	04/14/21

REFERENCES

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.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
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, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

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, EPA 537.1.

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

ALPHA ANALYTICAL

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Page 1 of 1

Date Rec'd in Lab: 4/8/21

ALPHA Job #: L2117917

H&A Information

H&A Client: ARE-MA Region No. 82, LLC
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Project Information

Project Name: Reservoir Woods East
Project Location: 40, 50, 60 Sylvan Street, Waltham, MA
Project # 135544-003-005-01
(Use Project name as Project #) ☐
Project Manager: Abby Kerrigan, Rich Genovesi
ALPHAQuote #: BINNEY

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☑ Email ☐ Fax
☑ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other:

Billing Information

☑ Same as Client Info
PO #

Regulatory Requirements (Program/Criteria)

MA GW2

Note: Select State from menu & identify criteria.

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Depth	VOCs (8260)	Total Bottles	Sample Specific Comments
17917 -01	H/A21-13(OW)	4/8/21	12:35	Water	AFM	X	X		

Total Bottle Count: _____

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

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

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	V							
Preservative	B							

Relinquished By:	Date/Time	Received By:	Date/Time
	4/8/21 16:30	AAC	4/8/21 1630
AAC	4/8 1745		4/8/21 1745

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. Alpha Analytical's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement# 2019-22-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 3 (1/7/2019)

Method Blank Summary
Form 4
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2117917
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-003-005-01
Lab Sample ID	: WG1485569-5	**Lab File ID**	: J210413A06
Instrument ID	: JACK		
Matrix	: WATER	**Analysis Date**	: 04/13/21 05:56

Client Sample No.	Lab Sample ID	Analysis Date
WG1485569-3LCS	WG1485569-3	04/13/21 04:34
WG1485569-4LCSD	WG1485569-4	04/13/21 05:15
HA21-13(OW)	L2117917-01	04/13/21 09:21

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2117917
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-003-005-01
Instrument ID	: JACK	**Calibration Date**	: 04/13/21 04:34
Lab File ID	: J210413A02	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1485569-2	**Init. Calib. Times**	: 06:30 15:24
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	95	0
Dichlorodifluoromethane	0.988	0.866	-	12.3	20	70	0
Chloromethane	1.815	1.841	-	-1.4	20	86	-.01
Vinyl chloride	2.051	2.215	-	-8	20	89	0
Bromomethane	10	12.709	-	-27.1*	20	102	0
Chloroethane	1.105	1.255	-	-13.6	20	93	0
Trichlorofluoromethane	1.917	2.033	-	-6.1	20	91	0
Ethyl ether	0.807	0.85	-	-5.3	20	93	0
1,1-Dichloroethene	1.166	1.223	-	-4.9	20	91	0
Carbon disulfide	3.943	4.225	-	-7.2	20	92	0
Freon-113	1.185	1.295	-	-9.3	20	97	0
Iodomethane	10	8.166	-	18.3	20	84	0
Acrolein	0.199	0.229	-	-15.1	20	98	0
Methylene chloride	1.4	1.524	-	-8.9	20	95	0
Acetone	0.45	0.567	-	-26*	20	108	-.01
trans-1,2-Dichloroethene	1.251	1.302	-	-4.1	20	91	0
Methyl acetate	1.243	1.466	-	-17.9	20	104	0
Methyl tert-butyl ether	3.987	4.023	-	-0.9	20	89	0
tert-Butyl alcohol	0.133	0.143	-	-7.5	20	93	0
Diisopropyl ether	5.638	6.239	-	-10.7	20	97	0
1,1-Dichloroethane	3	3.416	-	-13.9	20	97	0
Halothane	0.888	0.951	-	-7.1	20	94	0
Acrylonitrile	0.612	0.673	-	-10	20	96	0
Ethyl tert-butyl ether	4.868	5.034	-	-3.4	20	92	0
Vinyl acetate	4.411	4.758	-	-7.9	20	96	0
cis-1,2-Dichloroethene	1.456	1.494	-	-2.6	20	90	0
2,2-Dichloropropane	2.152	2.407	-	-11.8	20	99	0
Bromochloromethane	0.558	0.588	-	-5.4	20	93	0
Cyclohexane	3.001	3.349	-	-11.6	20	98	0
Chloroform	2.538	2.772	-	-9.2	20	99	0
Ethyl acetate	1.761	1.978	-	-12.3	20	101	0
Carbon tetrachloride	10	10.357	-	-3.6	20	97	0
Tetrahydrofuran	0.488	0.591	-	-21.1*	20	97	0
Dibromofluoromethane	0.222	0.228	-	-2.7	20	94	0
1,1,1-Trichloroethane	2.006	2.143	-	-6.8	20	94	0
2-Butanone	0.78	0.894	-	-14.6	20	99	0
1,1-Dichloropropene	2.054	2.186	-	-6.4	20	94	0
Benzene	6.159	6.363	-	-3.3	20	91	0
tert-Amyl methyl ether	4.072	3.956	-	2.8	20	89	0
1,2-Dichloroethane-d4	0.391	0.406	-	-3.8	20	101	0
1,2-Dichloroethane	2.102	2.368	-	-12.7	20	98	0
Methyl cyclohexane	2.764	2.765	-	-0	20	89	0
Trichloroethene	1.41	1.462	-	-3.7	20	91	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2117917
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-003-005-01
Instrument ID	: JACK	**Calibration Date**	: 04/13/21 04:34
Lab File ID	: J210413A02	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1485569-2	**Init. Calib. Times**	: 06:30 15:24
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Dibromomethane	0.835	0.877	-	-5	20	94	0
1,2-Dichloropropane	1.7	1.84	-	-8.2	20	95	0
2-Chloroethyl vinyl ether	1.061	1.016	-	4.2	20	88	0
Bromodichloromethane	1.958	2.042	-	-4.3	20	93	0
1,4-Dioxane	0.012	0.013*	-	-8.3	20	92	-.01
cis-1,3-Dichloropropene	2.539	2.687	-	-5.8	20	95	0
Chlorobenzene-d5	1	1	-	0	20	88	0
Toluene-d8	1.312	1.402	-	-6.9	20	92	0
Toluene	4.715	5.074	-	-7.6	20	89	0
4-Methyl-2-pentanone	0.788	0.782	-	0.8	20	88	0
Tetrachloroethene	1.54	1.698	-	-10.3	20	96	0
trans-1,3-Dichloropropene	3.013	3.391	-	-12.5	20	92	0
Ethyl methacrylate	2.61	2.702	-	-3.5	20	89	0
1,1,2-Trichloroethane	1.482	1.662	-	-12.1	20	94	0
Chlorodibromomethane	1.493	1.561	-	-4.6	20	91	0
1,3-Dichloropropane	3.15	3.458	-	-9.8	20	91	0
1,2-Dibromoethane	1.509	1.607	-	-6.5	20	92	0
2-Hexanone	1.508	1.586	-	-5.2	20	96	0
Chlorobenzene	4.887	5.132	-	-5	20	90	0
Ethylbenzene	9.17	10.118	-	-10.3	20	90	0
1,1,1,2-Tetrachloroethane	1.509	1.595	-	-5.7	20	90	0
p/m Xylene	3.495	3.824	-	-9.4	20	92	0
o Xylene	3.273	3.534	-	-8	20	88	0
Styrene	5.609	6.33	-	-12.9	20	93	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	96	0
Bromoform	1.961	1.701	-	13.3	20	93	0
Isopropylbenzene	17.13	16.463	-	3.9	20	90	0
4-Bromofluorobenzene	1.017	0.96	-	5.6	20	91	0
Bromobenzene	3.526	3.185	-	9.7	20	92	0
n-Propylbenzene	23.023	22.919	-	0.5	20	90	0
1,4-Dichlorobutane	6.731	7.255	-	-7.8	20	95	0
1,1,2,2-Tetrachloroethane	10	11.202	-	-12	20	91	0
4-Ethyltoluene	16.526	16.516	-	0.1	20	91	0
2-Chlorotoluene	14.927	15.127	-	-1.3	20	92	0
1,3,5-Trimethylbenzene	14.394	14.176	-	1.5	20	92	0
1,2,3-Trichloropropane	3.663	3.903	-	-6.6	20	91	0
trans-1,4-Dichloro-2-buten	1.458	1.561	-	-7.1	20	94	0
4-Chlorotoluene	13.502	13.424	-	0.6	20	92	0
tert-Butylbenzene	11.747	11.509	-	2	20	91	0
1,2,4-Trimethylbenzene	14.075	13.682	-	2.8	20	90	0
sec-Butylbenzene	17.271	17.267	-	0	20	91	0
p-Isopropyltoluene	14.764	14.415	-	2.4	20	92	0
1,3-Dichlorobenzene	7.29	7.163	-	1.7	20	95	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.		**Lab Number**	: L2117917	
Project Name	: RESERVOIR WOODS EAST		**Project Number**	: 135544-003-005-01	
Instrument ID	: JACK		**Calibration Date**	: 04/13/21 04:34	
Lab File ID	: J210413A02		**Init. Calib. Date(s)**	: 04/06/21	04/06/21
Sample No	: WG1485569-2		**Init. Calib. Times**	: 06:30	15:24
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,4-Dichlorobenzene	7.245	7.073	-	2.4	20	96	0
p-Diethylbenzene	8.496	8.315	-	2.1	20	94	0
n-Butylbenzene	15.567	15.972	-	-2.6	20	93	0
1,2-Dichlorobenzene	6.684	6.453	-	3.5	20	94	0
1,2,4,5-Tetramethylbenzene	12.111	11.076	-	8.5	20	90	0
1,2-Dibromo-3-chloropropan	0.522	0.473	-	9.4	20	89	0
1,3,5-Trichlorobenzene	4.178	3.905	-	6.5	20	98	0
Hexachlorobutadiene	1.414	1.365	-	3.5	20	101	0
1,2,4-Trichlorobenzene	3.612	3.191	-	11.7	20	96	0
Naphthalene	11.584	10.323	-	10.9	20	91	0
1,2,3-Trichlorobenzene	3.388	3.141	-	7.3	20	99	0

* Value outside of QC limits.

ANALYTICAL REPORT

Lab Number:	L2118139
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Abby Kerrigan
Phone:	(617) 886-7400
Project Name:	RESERVOIR WOODS EAST
Project Number:	135544-004-000-02
Report Date:	04/15/21

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: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118139
Report Date: 04/15/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2118139-01	HA21-20(OW)	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/09/21 11:45	04/09/21
L2118139-02	HA21-6(OW)	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/09/21 13:45	04/09/21
L2118139-03	TB-040921	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/08/21 15:10	04/09/21

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

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)?	YES

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

Case Narrative (continued)

MCP Related Narratives

Volatile Organics

L2118139-01 through -03: Initial calibration utilized a quadratic fit for: bromomethane, 1,2,4-trichlorobenzene, hexachlorobutadiene

In reference to question H:

L2118139-01 through -03: Initial Calibration did not meet:

Lowest Calibration Standard Minimum Response Factor: 1,4-dioxane (0.0095)

Average Response Factor: 1,4-dioxane

L2118139-01 through -03: The associated continuing calibration standard is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

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:  Caitlin Walukevich

Title: Technical Director/Representative Date: 04/15/21

QC OUTLIER SUMMARY REPORT

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118139
Report Date: 04/15/21

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: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-01
Client ID: HA21-20(OW)
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA

Date Collected: 04/09/21 11:45
Date Received: 04/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/14/21 09:53
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-01 Date Collected: 04/09/21 11:45

Client ID: HA21-20(OW) Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-01 Date Collected: 04/09/21 11:45

Client ID: HA21-20(OW) Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	128		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-02 Date Collected: 04/09/21 13:45
Client ID: HA21-6(OW) Date Received: 04/09/21
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/14/21 09:12
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-02 Date Collected: 04/09/21 13:45

Client ID: HA21-6(OW) Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-02 Date Collected: 04/09/21 13:45

Client ID: HA21-6(OW) Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	116		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-03 Date Collected: 04/08/21 15:10
Client ID: TB-040921 Date Received: 04/09/21
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/14/21 08:31
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-03 Date Collected: 04/08/21 15:10

Client ID: TB-040921 Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

SAMPLE RESULTS

Lab ID: L2118139-03 Date Collected: 04/08/21 15:10

Client ID: TB-040921 Date Received: 04/09/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	119		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene, Total	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
Methyl ethyl ketone	ND		ug/l	5.0	--
Methyl isobutyl ketone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118139

Project Number: 135544-004-000-02 **Report Date:** 04/15/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Diethyl ether	ND		ug/l	2.0	--
Diisopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	115		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118139

Report Date: 04/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	110		120		70-130	9		20
Chloroform	100		110		70-130	10		20
Carbon tetrachloride	97		110		70-130	13		20
1,2-Dichloropropane	100		110		70-130	10		20
Dibromochloromethane	100		100		70-130	0		20
1,1,2-Trichloroethane	120		110		70-130	9		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	100		110		70-130	10		20
Trichlorofluoromethane	100		110		70-130	10		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	100		110		70-130	10		20
Bromodichloromethane	99		110		70-130	11		20
trans-1,3-Dichloropropene	120		110		70-130	9		20
cis-1,3-Dichloropropene	100		110		70-130	10		20
1,1-Dichloropropene	99		110		70-130	11		20
Bromoform	93		89		70-130	4		20
1,1,2,2-Tetrachloroethane	110		110		70-130	0		20
Benzene	100		110		70-130	10		20
Toluene	110		110		70-130	0		20
Ethylbenzene	110		110		70-130	0		20
Chloromethane	100		100		70-130	0		20
Bromomethane	92		96		70-130	4		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118139

Report Date: 04/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Vinyl chloride	97		100		70-130	3		20
Chloroethane	110		110		70-130	0		20
1,1-Dichloroethene	100		110		70-130	10		20
trans-1,2-Dichloroethene	100		110		70-130	10		20
Trichloroethene	100		110		70-130	10		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	110		110		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	100		100		70-130	0		20
p/m-Xylene	110		110		70-130	0		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	100		110		70-130	10		20
Dibromomethane	99		100		70-130	1		20
1,2,3-Trichloropropane	110		110		70-130	0		20
Styrene	110		110		70-130	0		20
Dichlorodifluoromethane	74		77		70-130	4		20
Acetone	130		120		70-130	8		20
Carbon disulfide	100		110		70-130	10		20
Methyl ethyl ketone	120		120		70-130	0		20
Methyl isobutyl ketone	110		100		70-130	10		20
2-Hexanone	120		120		70-130	0		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	120		120		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118139

Report Date: 04/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
2,2-Dichloropropane	100		110		70-130	10		20
1,2-Dibromoethane	110		100		70-130	10		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	110		100		70-130	10		20
Bromobenzene	94		100		70-130	6		20
n-Butylbenzene	110		110		70-130	0		20
sec-Butylbenzene	110		110		70-130	0		20
tert-Butylbenzene	100		110		70-130	10		20
o-Chlorotoluene	100		110		70-130	10		20
p-Chlorotoluene	100		110		70-130	10		20
1,2-Dibromo-3-chloropropane	100		99		70-130	1		20
Hexachlorobutadiene	110		100		70-130	10		20
Isopropylbenzene	100		100		70-130	0		20
p-Isopropyltoluene	110		110		70-130	0		20
Naphthalene	100		95		70-130	5		20
n-Propylbenzene	100		110		70-130	10		20
1,2,3-Trichlorobenzene	100		97		70-130	3		20
1,2,4-Trichlorobenzene	100		100		70-130	0		20
1,3,5-Trimethylbenzene	100		110		70-130	10		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
Diethyl ether	100		110		70-130	10		20
Diisopropyl Ether	110		120		70-130	9		20
Ethyl-Tert-Butyl-Ether	100		110		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118139

Report Date: 04/15/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Tertiary-Amyl Methyl Ether	95		100		70-130	5		20
1,4-Dioxane	106		98		70-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		102		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	94		97		70-130

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118139
Report Date: 04/15/21

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(*)
L2118139-01A	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-01B	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-01C	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-02A	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-02B	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-02C	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-03A	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)
L2118139-03B	Vial HCl preserved	A	NA		4.2	Y	Absent		MCP-8260-10(14)

*Values in parentheses indicate holding time in days

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

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.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

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.

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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

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

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

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

Data Qualifiers

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118139
Project Number:	135544-004-000-02	**Report Date:**	04/15/21

REFERENCES

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.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
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, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

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, EPA 537.1.

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

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers: Brewer, ME 04412 — Portsmouth, NH 03801 — Mahwah, NJ 07430 — Albany, NY 12205 — Tonawanda, NY 14150 — Holmes, PA 19043

Page 1 of 1

Date Rec'd in Lab: 4/9/21

ALPHA Job #: L2118139

H&A Information

H&A Client:	ARE-MA Region No. 82, LLC
H&A Address:	465 Medford St., Suite 2200
	Boston, MA 02129
H&A Phone:	617.886.7473
H&A Fax:	rgenovesi@haleyaldrich.com
H&A Email:	akerrigan@haleyaldrich.com

Project Information

Project Name:	Reservoir Woods East
Project Location:	40, 50, 60 Sylvan Street, Waltham, MA
Project #	135544-004-000-02
(Use Project name as Project #)	☐
Project Manager:	Abby Kerrigan, Rich Genovesi
ALPHAQuote #:	BINNEY

Turn-Around Time: Standard ☑ — Due Date: — Rush (only if pre approved) ☐ — # of Days:

Deliverables

☑ Email ☐ Fax ☑ EQuIS (1 File) ☐ EQuIS (4 File) ☐ Other:

Billing Information

☑ Same as Client Info

PO #

Regulatory Requirements (Program/Criteria)

MA GW2

Note: Select State from menu & identify criteria.

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility: ☐ NJ ☐ NY ☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

VOCs (8260)

Sample Filtration

☐ Done
☐ Lab to do

Preservation

☐ Lab to do

(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Depth	VOCs (8260)	Sample Specific Comments	Total Bottles
18139-01	HA21-20(OW)	4/9/2021	1145	Water	AEM	—	X		3
-02	HA21-6(OW)	4/9/2021	1345	Water	AEM	—	X		3
-03	TB-040921	4/8/2021	1510	DW	CM	—	X	lab provided	2
								Total Bottle Count:	

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935

Mansfield: Certification No: MA015

Container Type	V							
Preservative	B							

Relinquished By:	Date/Time	Received By:	Date/Time
AAL 4/9/21	4/9/21 1650	AAL 4/9/21	1510
			4/9/21 1650

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. Alpha Analytical's services under this Chain of Custody shall be performed in accordance with terms and conditions within Blanket Service Agreement# 2019-22-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 3 (1/7/2019)

Method Blank Summary
Form 4
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118139
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Lab Sample ID	: WG1486024-5	**Lab File ID**	: J210414A05
Instrument ID	: JACK		
Matrix	: WATER	**Analysis Date**	: 04/14/21 05:06

Client Sample No.	Lab Sample ID	Analysis Date
WG1486024-3LCS	WG1486024-3	04/14/21 03:44
WG1486024-4LCSD	WG1486024-4	04/14/21 04:25
TB-040921	L2118139-03	04/14/21 08:31
HA21-6(OW)	L2118139-02	04/14/21 09:12
HA21-20(OW)	L2118139-01	04/14/21 09:53

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118139
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Instrument ID	: JACK	**Calibration Date**	: 04/14/21 03:44
Lab File ID	: J210414A01	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1486024-2	**Init. Calib. Times**	: 06:51 15:03
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	94	0
Dichlorodifluoromethane	1.063	0.783	-	26.3*	20	62	0
Chloromethane	1.777	1.77	-	0.4	20	81	0
Vinyl chloride	2.131	2.059	-	3.4	20	80	0
Bromomethane	10	9.174	-	8.3	20	77	0
Chloroethane	1.132	1.24	-	-9.5	20	86	0
Trichlorofluoromethane	1.963	1.995	-	-1.6	20	86	0
Ethyl ether	0.811	0.826	-	-1.8	20	89	0
1,1-Dichloroethene	1.225	1.233	-	-0.7	20	87	0
Carbon disulfide	4.134	4.233	-	-2.4	20	87	0
Freon-113	1.249	1.267	-	-1.4	20	87	0
Acrolein	0.195	0.211	-	-8.2	20	93	0
Methylene chloride	1.42	1.519	-	-7	20	90	0
Acetone	0.421	0.539	-	-28*	20	107	0
trans-1,2-Dichloroethene	1.295	1.31	-	-1.2	20	88	0
Methyl acetate	1.123	1.324	-	-17.9	20	105	0
Methyl tert-butyl ether	3.731	3.786	-	-1.5	20	95	0
tert-Butyl alcohol	0.112	0.126	-	-12.5	20	112	0
Diisopropyl ether	5.416	5.994	-	-10.7	20	98	0
1,1-Dichloroethane	3.15	3.401	-	-8	20	90	0
Halothane	0.935	0.951	-	-1.7	20	89	0
Acrylonitrile	0.54	0.648	-	-20	20	100	0
Ethyl tert-butyl ether	4.546	4.679	-	-2.9	20	96	0
Vinyl acetate	3.97	4.328	-	-9	20	102	0
cis-1,2-Dichloroethene	1.495	1.529	-	-2.3	20	88	0
2,2-Dichloropropane	2.269	2.401	-	-5.8	20	95	0
Bromochloromethane	0.579	0.606	-	-4.7	20	93	0
Cyclohexane	3.039	3.262	-	-7.3	20	91	0
Chloroform	2.689	2.705	-	-0.6	20	87	0
Ethyl acetate	1.446	1.555	-	-7.5	20	101	0
Carbon tetrachloride	1.62	1.574	-	2.8	20	85	0
Tetrahydrofuran	0.434	0.546	-	-25.8*	20	104	0
Dibromofluoromethane	0.243	0.229	-	5.8	20	91	0
1,1,1-Trichloroethane	2.087	2.135	-	-2.3	20	89	0
2-Butanone	0.63	0.748	-	-18.7	20	110	0
1,1-Dichloropropene	2.06	2.042	-	0.9	20	86	0
Benzene	6.094	6.257	-	-2.7	20	92	0
tert-Amyl methyl ether	3.752	3.567	-	4.9	20	90	0
1,2-Dichloroethane-d4	0.4	0.389	-	2.8	20	91	0
1,2-Dichloroethane	2.172	2.305	-	-6.1	20	92	0
Methyl cyclohexane	2.718	2.736	-	-0.7	20	89	0
Trichloroethene	1.386	1.394	-	-0.6	20	90	0
Dibromomethane	0.835	0.825	-	1.2	20	88	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118139
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Instrument ID	: JACK	**Calibration Date**	: 04/14/21 03:44
Lab File ID	: J210414A01	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1486024-2	**Init. Calib. Times**	: 06:51 15:03
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	1.734	1.779	-	-2.6	20	91	0
2-Chloroethyl vinyl ether	0.93	0.841	-	9.6	20	84	0
Bromodichloromethane	2.051	2.026	-	1.2	20	89	0
1,4-Dioxane	0.011	0.011*	-	0	20	96	0
cis-1,3-Dichloropropene	2.48	2.497	-	-0.7	20	91	0
Chlorobenzene-d5	1	1	-	0	20	84	0
Toluene-d8	1.295	1.338	-	-3.3	20	83	0
Toluene	4.665	5.038	-	-8	20	85	0
4-Methyl-2-pentanone	0.633	0.682	-	-7.7	20	95	0
Tetrachloroethene	1.509	1.651	-	-9.4	20	97	0
trans-1,3-Dichloropropene	2.822	3.261	-	-15.6	20	93	0
Ethyl methacrylate	2.319	2.316	-	0.1	20	83	0
1,1,2-Trichloroethane	1.359	1.572	-	-15.7	20	95	0
Chlorodibromomethane	1.446	1.525	-	-5.5	20	92	0
1,3-Dichloropropane	2.89	3.284	-	-13.6	20	94	0
1,2-Dibromoethane	1.36	1.53	-	-12.5	20	97	0
2-Hexanone	1.159	1.349	-	-16.4	20	94	0
Chlorobenzene	4.762	5.031	-	-5.6	20	87	0
Ethylbenzene	9.087	9.909	-	-9	20	84	0
1,1,1,2-Tetrachloroethane	1.447	1.544	-	-6.7	20	93	0
p/m Xylene	3.498	3.782	-	-8.1	20	85	0
o Xylene	3.305	3.572	-	-8.1	20	84	0
Styrene	5.661	6.238	-	-10.2	20	85	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	87	0
Bromoform	10	9.309	-	6.9	20	95	0
Isopropylbenzene	17.237	17.515	-	-1.6	20	85	0
4-Bromofluorobenzene	1.006	0.977	-	2.9	20	85	0
Bromobenzene	3.515	3.323	-	5.5	20	91	0
n-Propylbenzene	23.158	24.168	-	-4.4	20	84	0
1,4-Dichlorobutane	6.223	7.136	-	-14.7	20	93	0
1,1,2,2-Tetrachloroethane	10	11.478	-	-14.8	20	92	0
4-Ethyltoluene	16.64	17.48	-	-5	20	87	0
2-Chlorotoluene	15.112	15.73	-	-4.1	20	85	0
1,3,5-Trimethylbenzene	14.217	14.888	-	-4.7	20	88	0
1,2,3-Trichloropropane	3.239	3.607	-	-11.4	20	91	0
trans-1,4-Dichloro-2-buten	1.298	1.536	-	-18.3	20	91	0
4-Chlorotoluene	13.612	14.054	-	-3.2	20	84	0
tert-Butylbenzene	11.914	12.232	-	-2.7	20	86	0
1,2,4-Trimethylbenzene	13.724	14.472	-	-5.5	20	90	0
sec-Butylbenzene	17.277	18.654	-	-8	20	86	0
p-Isopropyltoluene	14.39	15.594	-	-8.4	20	89	0
1,3-Dichlorobenzene	7.305	7.824	-	-7.1	20	93	0
1,4-Dichlorobenzene	7.308	7.552	-	-3.3	20	93	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.		**Lab Number**	: L2118139	
Project Name	: RESERVOIR WOODS EAST		**Project Number**	: 135544-004-000-02	
Instrument ID	: JACK		**Calibration Date**	: 04/14/21 03:44	
Lab File ID	: J210414A01		**Init. Calib. Date(s)**	: 04/06/21	04/06/21
Sample No	: WG1486024-2		**Init. Calib. Times**	: 06:51	15:03
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
p-Diethylbenzene	8.273	8.808	-	-6.5	20	92	0
n-Butylbenzene	14.883	16.491	-	-10.8	20	91	0
1,2-Dichlorobenzene	6.648	6.889	-	-3.6	20	92	0
1,2,4,5-Tetramethylbenzene	10.716	10.446	-	2.5	20	91	0
1,2-Dibromo-3-chloropropan	0.466	0.469	-	-0.6	20	96	0
1,3,5-Trichlorobenzene	4.04	4.275	-	-5.8	20	104	0
Hexachlorobutadiene	10	10.964	-	-9.6	20	101	0
1,2,4-Trichlorobenzene	10	10.472	-	-4.7	20	97	0
Naphthalene	8.515	8.697	-	-2.1	20	94	0
1,2,3-Trichlorobenzene	2.936	3.044	-	-3.7	20	100	0

*** Value outside of QC limits.**

ANALYTICAL REPORT

Lab Number:	L2118387
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Abby Kerrigan
Phone:	(617) 886-7400
Project Name:	RESERVOIR WOODS EAST
Project Number:	135544-004-000-02
Report Date:	04/16/21

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: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118387
Report Date: 04/16/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2118387-01	HA21-2(OW)	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/12/21 11:00	04/12/21
L2118387-02	HA21-23(OW)	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/12/21 14:25	04/12/21
L2118387-03	TB04122021	WATER	40,50,60 SYLVAN ST., WALTHAM, MA	04/12/21 11:15	04/12/21

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

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)?	YES

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

Case Narrative (continued)

MCP Related Narratives

Volatile Organics

L2118387-01: The pH of the sample was greater than two; however, the sample was analyzed within the method required holding time.

L2118387-01 through -03: Initial calibration utilized a quadratic fit for: bromomethane, 1,2,4-trichlorobenzene, hexachlorobutadiene

In reference to question H:

L2118387-01 through -03: Initial Calibration did not meet:

Lowest Calibration Standard Minimum Response Factor: 1,4-dioxane (0.0095)

Average Response Factor: 1,4-dioxane

L2118387-01 through -03: The associated continuing calibration standard is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

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:  Caitlin Walukevich

Title: Technical Director/Representative Date: 04/16/21

QC OUTLIER SUMMARY REPORT

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118387
Report Date: 04/16/21

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: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-01 Date Collected: 04/12/21 11:00

Client ID: HA21-2(OW) Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 97,8260C

Analytical Date: 04/14/21 14:00

Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-01 Date Collected: 04/12/21 11:00

Client ID: HA21-2(OW) Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-01 Date Collected: 04/12/21 11:00

Client ID: HA21-2(OW) Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	123		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-02 Date Collected: 04/12/21 14:25
Client ID: HA21-23(OW) Date Received: 04/12/21
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/14/21 13:19
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-02 Date Collected: 04/12/21 14:25

Client ID: HA21-23(OW) Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	4.2		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-02 Date Collected: 04/12/21 14:25

Client ID: HA21-23(OW) Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	122		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-03 Date Collected: 04/12/21 11:15
Client ID: TB04122021 Date Received: 04/12/21
Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/14/21 12:37
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.40	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.40	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.40	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-03 Date Collected: 04/12/21 11:15

Client ID: TB04122021 Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
Methyl ethyl ketone	ND		ug/l	5.0	--	1
Methyl isobutyl ketone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

SAMPLE RESULTS

Lab ID: L2118387-03 Date Collected: 04/12/21 11:15

Client ID: TB04122021 Date Received: 04/12/21

Sample Location: 40,50,60 SYLVAN ST., WALTHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Diethyl ether	ND		ug/l	2.0	--	1
Diisopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	129		70-130

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene, Total	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
Methyl ethyl ketone	ND		ug/l	5.0	--
Methyl isobutyl ketone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--

Project Name: RESERVOIR WOODS EAST **Lab Number:** L2118387

Project Number: 135544-004-000-02 **Report Date:** 04/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/14/21 05:06
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-03 Batch: WG1486024-5					
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Diethyl ether	ND		ug/l	2.0	--
Diisopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	115		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118387

Report Date: 04/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Methylene chloride	110		110		70-130	0		20
1,1-Dichloroethane	110		120		70-130	9		20
Chloroform	100		110		70-130	10		20
Carbon tetrachloride	97		110		70-130	13		20
1,2-Dichloropropane	100		110		70-130	10		20
Dibromochloromethane	100		100		70-130	0		20
1,1,2-Trichloroethane	120		110		70-130	9		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	100		110		70-130	10		20
Trichlorofluoromethane	100		110		70-130	10		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	100		110		70-130	10		20
Bromodichloromethane	99		110		70-130	11		20
trans-1,3-Dichloropropene	120		110		70-130	9		20
cis-1,3-Dichloropropene	100		110		70-130	10		20
1,1-Dichloropropene	99		110		70-130	11		20
Bromoform	93		89		70-130	4		20
1,1,2,2-Tetrachloroethane	110		110		70-130	0		20
Benzene	100		110		70-130	10		20
Toluene	110		110		70-130	0		20
Ethylbenzene	110		110		70-130	0		20
Chloromethane	100		100		70-130	0		20
Bromomethane	92		96		70-130	4		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118387

Report Date: 04/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Vinyl chloride	97		100		70-130	3		20
Chloroethane	110		110		70-130	0		20
1,1-Dichloroethene	100		110		70-130	10		20
trans-1,2-Dichloroethene	100		110		70-130	10		20
Trichloroethene	100		110		70-130	10		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	110		110		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	100		100		70-130	0		20
p/m-Xylene	110		110		70-130	0		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	100		110		70-130	10		20
Dibromomethane	99		100		70-130	1		20
1,2,3-Trichloropropane	110		110		70-130	0		20
Styrene	110		110		70-130	0		20
Dichlorodifluoromethane	74		77		70-130	4		20
Acetone	130		120		70-130	8		20
Carbon disulfide	100		110		70-130	10		20
Methyl ethyl ketone	120		120		70-130	0		20
Methyl isobutyl ketone	110		100		70-130	10		20
2-Hexanone	120		120		70-130	0		20
Bromochloromethane	100		110		70-130	10		20
Tetrahydrofuran	120		120		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118387

Report Date: 04/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
2,2-Dichloropropane	100		110		70-130	10		20
1,2-Dibromoethane	110		100		70-130	10		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	110		100		70-130	10		20
Bromobenzene	94		100		70-130	6		20
n-Butylbenzene	110		110		70-130	0		20
sec-Butylbenzene	110		110		70-130	0		20
tert-Butylbenzene	100		110		70-130	10		20
o-Chlorotoluene	100		110		70-130	10		20
p-Chlorotoluene	100		110		70-130	10		20
1,2-Dibromo-3-chloropropane	100		99		70-130	1		20
Hexachlorobutadiene	110		100		70-130	10		20
Isopropylbenzene	100		100		70-130	0		20
p-Isopropyltoluene	110		110		70-130	0		20
Naphthalene	100		95		70-130	5		20
n-Propylbenzene	100		110		70-130	10		20
1,2,3-Trichlorobenzene	100		97		70-130	3		20
1,2,4-Trichlorobenzene	100		100		70-130	0		20
1,3,5-Trimethylbenzene	100		110		70-130	10		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
Diethyl ether	100		110		70-130	10		20
Diisopropyl Ether	110		120		70-130	9		20
Ethyl-Tert-Butyl-Ether	100		110		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RESERVOIR WOODS EAST

Project Number: 135544-004-000-02

Lab Number: L2118387

Report Date: 04/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG1486024-3 WG1486024-4								
Tertiary-Amyl Methyl Ether	95		100		70-130	5		20
1,4-Dioxane	106		98		70-130	8		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		102		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	94		97		70-130

Project Name: RESERVOIR WOODS EAST
Project Number: 135544-004-000-02

Lab Number: L2118387
Report Date: 04/16/21

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(*)
L2118387-01A	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-01B	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-01C	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-02A	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-02B	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-02C	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-03A	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)
L2118387-03B	Vial HCl preserved	A	NA		2.4	Y	Absent		MCP-8260-10(14)

*Values in parentheses indicate holding time in days

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

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.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

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.

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

Footnotes

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

Terms

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

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

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

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

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

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

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

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

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

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

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

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

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

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

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

Report Format: Data Usability Report

Project Name:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

Data Qualifiers

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:	RESERVOIR WOODS EAST	**Lab Number:**	L2118387
Project Number:	135544-004-000-02	**Report Date:**	04/16/21

REFERENCES

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.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
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, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

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, EPA 537.1.

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

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers: Brewer, ME 04412 — Portsmouth, NH 03801 — Mahwah, NJ 07430 — Albany, NY 12205 — Tonawanda, NY 14150 — Holmes, PA 19043

Page 1 of 1

Date Rec'd in Lab: 04/12/21 ~~L2118387~~

ALPHA Job: L2118387

H&A Information

H&A Client:	ARE-MA Region No. 82, LLC
H&A Address:	465 Medford St., Suite 2200
Boston, MA 02129	
H&A Phone:	617.886.7473
H&A Fax:	rgenovesi@haleyaldrich.com
H&A Email:	akerrigan@haleyaldrich.com

Project Information

Project Name:	Reservoir Woods East
Project Location:	40, 50, 60 Sylvan Street, Waltham, MA
Project #	135544-004-000-02
(Use Project name as Project #)	☐
Project Manager:	Abby Kerrigan, Rich Genovesi
ALPHAQuote #:	~~BINNEX~~ Reservoir Woods

Turn-Around Time

Standard ☑ — Due Date:

Rush (only if pre approved) ☐ — # of Days:

Deliverables

☑ Email ☐ Fax

☑ EQuIS (1 File) ☐ EQuIS (4 File)

☐ Other:

Regulatory Requirements (Program/Criteria)

MA GW2

Note: Select State from menu & identify criteria.

Billing Inform

☑ Same

PO #

Disposal Site

Please identify applicable disp

Disposal Facili

☐ NJ

☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Depth	VOCs (8260)
18387-01	HA21-2(0-1)	4/12/21	11:00	Water	AFM	9'	X
-02	HA21-23(0-1)	4/12/21	14:25	Water	AFM	11.10	X
-03	~~TB~~ TB04122021	4/12/21	11:15	Water	CW	~~NA~~	X

Sample Filt: ☐ Done ☐ Lab to d

Preservatio: ☐ Lab to d

(Please Spe

Sample Specif

Total Bottle

Container Type: V

Preservative: B

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935

Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
AFM	4/12/21 1450		4/12/21 1745
	4-12-21 1740		4/12/21 1740

Please print cl completely. Sa In and turnaro start until any resolved. Alph under this Chai performed in ac conditions withi Agreement# 20 and between H subsidiaries an Analytical.

Document ID: 20455 Rev 3 (1/7/2019)

Method Blank Summary
Form 4
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118387
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Lab Sample ID	: WG1486024-5	**Lab File ID**	: J210414A05
Instrument ID	: JACK		
Matrix	: WATER	**Analysis Date**	: 04/14/21 05:06

Client Sample No.	Lab Sample ID	Analysis Date
WG1486024-3LCS	WG1486024-3	04/14/21 03:44
WG1486024-4LCSD	WG1486024-4	04/14/21 04:25
TB04122021	L2118387-03	04/14/21 12:37
HA21-23(OW)	L2118387-02	04/14/21 13:19
HA21-2(OW)	L2118387-01	04/14/21 14:00

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118387
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Instrument ID	: JACK	**Calibration Date**	: 04/14/21 03:44
Lab File ID	: J210414A01	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1486024-2	**Init. Calib. Times**	: 06:51 15:03
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	94	0
Dichlorodifluoromethane	1.063	0.783	-	26.3*	20	62	0
Chloromethane	1.777	1.77	-	0.4	20	81	0
Vinyl chloride	2.131	2.059	-	3.4	20	80	0
Bromomethane	10	9.174	-	8.3	20	77	0
Chloroethane	1.132	1.24	-	-9.5	20	86	0
Trichlorofluoromethane	1.963	1.995	-	-1.6	20	86	0
Ethyl ether	0.811	0.826	-	-1.8	20	89	0
1,1-Dichloroethene	1.225	1.233	-	-0.7	20	87	0
Carbon disulfide	4.134	4.233	-	-2.4	20	87	0
Freon-113	1.249	1.267	-	-1.4	20	87	0
Acrolein	0.195	0.211	-	-8.2	20	93	0
Methylene chloride	1.42	1.519	-	-7	20	90	0
Acetone	0.421	0.539	-	-28*	20	107	0
trans-1,2-Dichloroethene	1.295	1.31	-	-1.2	20	88	0
Methyl acetate	1.123	1.324	-	-17.9	20	105	0
Methyl tert-butyl ether	3.731	3.786	-	-1.5	20	95	0
tert-Butyl alcohol	0.112	0.126	-	-12.5	20	112	0
Diisopropyl ether	5.416	5.994	-	-10.7	20	98	0
1,1-Dichloroethane	3.15	3.401	-	-8	20	90	0
Halothane	0.935	0.951	-	-1.7	20	89	0
Acrylonitrile	0.54	0.648	-	-20	20	100	0
Ethyl tert-butyl ether	4.546	4.679	-	-2.9	20	96	0
Vinyl acetate	3.97	4.328	-	-9	20	102	0
cis-1,2-Dichloroethene	1.495	1.529	-	-2.3	20	88	0
2,2-Dichloropropane	2.269	2.401	-	-5.8	20	95	0
Bromochloromethane	0.579	0.606	-	-4.7	20	93	0
Cyclohexane	3.039	3.262	-	-7.3	20	91	0
Chloroform	2.689	2.705	-	-0.6	20	87	0
Ethyl acetate	1.446	1.555	-	-7.5	20	101	0
Carbon tetrachloride	1.62	1.574	-	2.8	20	85	0
Tetrahydrofuran	0.434	0.546	-	-25.8*	20	104	0
Dibromofluoromethane	0.243	0.229	-	5.8	20	91	0
1,1,1-Trichloroethane	2.087	2.135	-	-2.3	20	89	0
2-Butanone	0.63	0.748	-	-18.7	20	110	0
1,1-Dichloropropene	2.06	2.042	-	0.9	20	86	0
Benzene	6.094	6.257	-	-2.7	20	92	0
tert-Amyl methyl ether	3.752	3.567	-	4.9	20	90	0
1,2-Dichloroethane-d4	0.4	0.389	-	2.8	20	91	0
1,2-Dichloroethane	2.172	2.305	-	-6.1	20	92	0
Methyl cyclohexane	2.718	2.736	-	-0.7	20	89	0
Trichloroethene	1.386	1.394	-	-0.6	20	90	0
Dibromomethane	0.835	0.825	-	1.2	20	88	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L2118387
Project Name	: RESERVOIR WOODS EAST	**Project Number**	: 135544-004-000-02
Instrument ID	: JACK	**Calibration Date**	: 04/14/21 03:44
Lab File ID	: J210414A01	**Init. Calib. Date(s)**	: 04/06/21 04/06/21
Sample No	: WG1486024-2	**Init. Calib. Times**	: 06:51 15:03
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	1.734	1.779	-	-2.6	20	91	0
2-Chloroethyl vinyl ether	0.93	0.841	-	9.6	20	84	0
Bromodichloromethane	2.051	2.026	-	1.2	20	89	0
1,4-Dioxane	0.011	0.011*	-	0	20	96	0
cis-1,3-Dichloropropene	2.48	2.497	-	-0.7	20	91	0
Chlorobenzene-d5	1	1	-	0	20	84	0
Toluene-d8	1.295	1.338	-	-3.3	20	83	0
Toluene	4.665	5.038	-	-8	20	85	0
4-Methyl-2-pentanone	0.633	0.682	-	-7.7	20	95	0
Tetrachloroethene	1.509	1.651	-	-9.4	20	97	0
trans-1,3-Dichloropropene	2.822	3.261	-	-15.6	20	93	0
Ethyl methacrylate	2.319	2.316	-	0.1	20	83	0
1,1,2-Trichloroethane	1.359	1.572	-	-15.7	20	95	0
Chlorodibromomethane	1.446	1.525	-	-5.5	20	92	0
1,3-Dichloropropane	2.89	3.284	-	-13.6	20	94	0
1,2-Dibromoethane	1.36	1.53	-	-12.5	20	97	0
2-Hexanone	1.159	1.349	-	-16.4	20	94	0
Chlorobenzene	4.762	5.031	-	-5.6	20	87	0
Ethylbenzene	9.087	9.909	-	-9	20	84	0
1,1,1,2-Tetrachloroethane	1.447	1.544	-	-6.7	20	93	0
p/m Xylene	3.498	3.782	-	-8.1	20	85	0
o Xylene	3.305	3.572	-	-8.1	20	84	0
Styrene	5.661	6.238	-	-10.2	20	85	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	87	0
Bromoform	10	9.309	-	6.9	20	95	0
Isopropylbenzene	17.237	17.515	-	-1.6	20	85	0
4-Bromofluorobenzene	1.006	0.977	-	2.9	20	85	0
Bromobenzene	3.515	3.323	-	5.5	20	91	0
n-Propylbenzene	23.158	24.168	-	-4.4	20	84	0
1,4-Dichlorobutane	6.223	7.136	-	-14.7	20	93	0
1,1,2,2-Tetrachloroethane	10	11.478	-	-14.8	20	92	0
4-Ethyltoluene	16.64	17.48	-	-5	20	87	0
2-Chlorotoluene	15.112	15.73	-	-4.1	20	85	0
1,3,5-Trimethylbenzene	14.217	14.888	-	-4.7	20	88	0
1,2,3-Trichloropropane	3.239	3.607	-	-11.4	20	91	0
trans-1,4-Dichloro-2-buten	1.298	1.536	-	-18.3	20	91	0
4-Chlorotoluene	13.612	14.054	-	-3.2	20	84	0
tert-Butylbenzene	11.914	12.232	-	-2.7	20	86	0
1,2,4-Trimethylbenzene	13.724	14.472	-	-5.5	20	90	0
sec-Butylbenzene	17.277	18.654	-	-8	20	86	0
p-Isopropyltoluene	14.39	15.594	-	-8.4	20	89	0
1,3-Dichlorobenzene	7.305	7.824	-	-7.1	20	93	0
1,4-Dichlorobenzene	7.308	7.552	-	-3.3	20	93	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: Haley & Aldrich, Inc.		**Lab Number**	: L2118387	
Project Name	: RESERVOIR WOODS EAST		**Project Number**	: 135544-004-000-02	
Instrument ID	: JACK		**Calibration Date**	: 04/14/21 03:44	
Lab File ID	: J210414A01		**Init. Calib. Date(s)**	: 04/06/21	04/06/21
Sample No	: WG1486024-2		**Init. Calib. Times**	: 06:51	15:03
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
p-Diethylbenzene	8.273	8.808	-	-6.5	20	92	0
n-Butylbenzene	14.883	16.491	-	-10.8	20	91	0
1,2-Dichlorobenzene	6.648	6.889	-	-3.6	20	92	0
1,2,4,5-Tetramethylbenzene	10.716	10.446	-	2.5	20	91	0
1,2-Dibromo-3-chloropropan	0.466	0.469	-	-0.6	20	96	0
1,3,5-Trichlorobenzene	4.04	4.275	-	-5.8	20	104	0
Hexachlorobutadiene	10	10.964	-	-9.6	20	101	0
1,2,4-Trichlorobenzene	10	10.472	-	-4.7	20	97	0
Naphthalene	8.515	8.697	-	-2.1	20	94	0
1,2,3-Trichlorobenzene	2.936	3.044	-	-3.7	20	100	0

*** Value outside of QC limits.**

APPENDIX D

Dilution Factor and Effluent Limit Calculations

Enter number values in green boxes below

Enter values in the units specified

↓

0.33	Q_R = Enter upstream flow in **MGD**
0.0288	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

2.48

Enter values in the units specified

↓

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

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

↓

6.9	pH in **Standard Units**
15.6	Temperature in **°C**
0.139	Ammonia in **mg/L**
104	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
128	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

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

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor approved

Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry

Discharge flow is equal to the design flow or 1 MGD, whichever is less

Only if approved by State as the entry for Q_R; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State

Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges

Hardness required for freshwater

Salinity required for saltwater (estuarine and marine)

Metals required for all discharges if present and if dilution factor is > 1

Enter 0 if non-detect or testing not required

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

Freshwater Results

Dilution Factor	12.5					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**137**	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	7973	µg/L		
Arsenic	**104**	µg/L	125	µg/L		
Cadmium	**10.2**	µg/L	0.5356	µg/L		
Chromium III	**323**	µg/L	140.5	µg/L		
Chromium VI	**323**	µg/L	142.5	µg/L		
Copper	**242**	µg/L	13.9	µg/L		
Iron	**5000**	µg/L	10992	µg/L		
Lead	**160**	µg/L	1.68	µg/L		
Mercury	**0.739**	µg/L	11.29	µg/L		
Nickel	**1450**	µg/L	79.5	µg/L		
Selenium	**235.8**	µg/L	62.3	µg/L		
Silver	**35.1**	µg/L	0.7	µg/L		
Zinc	**420**	µg/L	182.1	µg/L		
Cyanide	**178**	mg/L	64.8	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	3738	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	19.9	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	41.1	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	27.4	µg/L		

Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	249	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

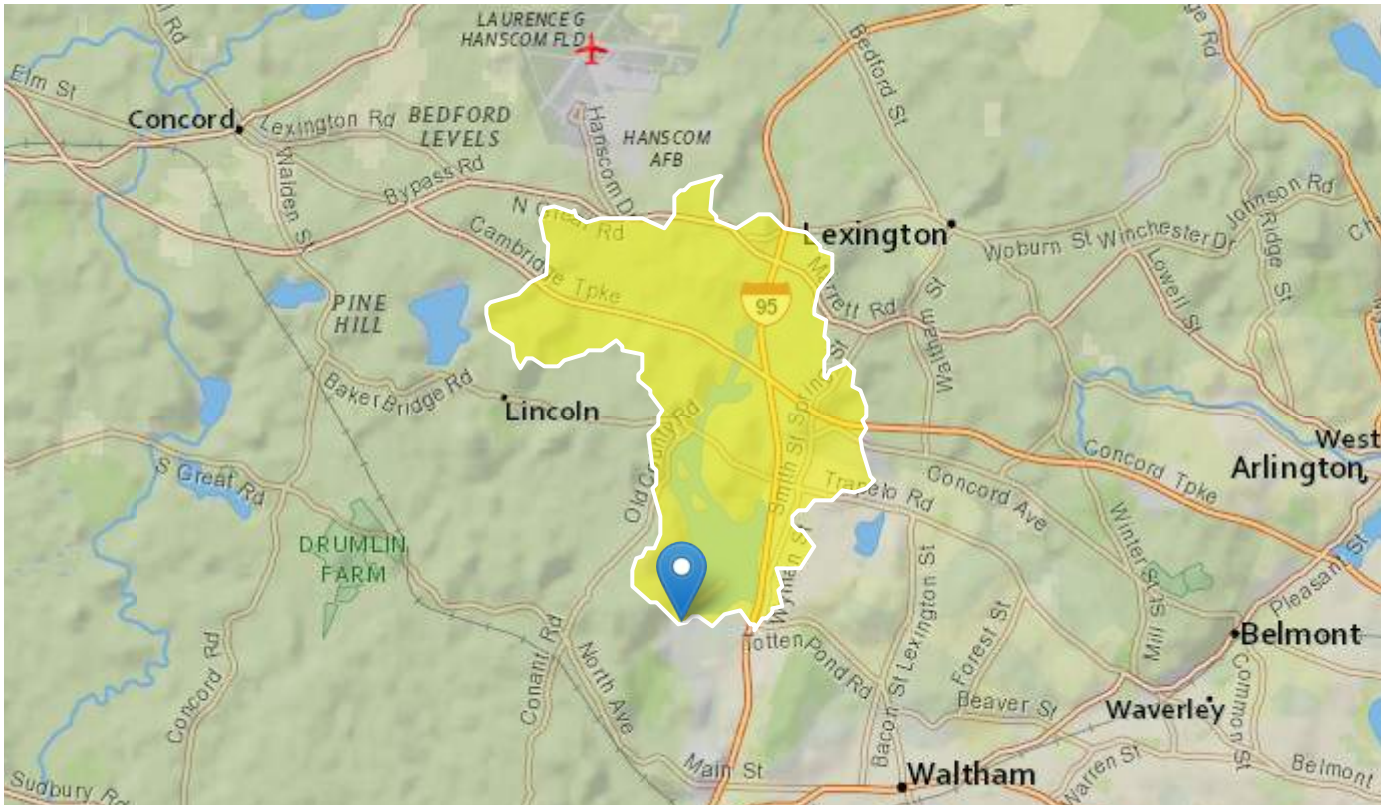
Saltwater Results

Dilution Factor	2.5					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**93.4**	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	7973	µg/L		
Arsenic	**104**	µg/L	449	µg/L		
Cadmium	**10.2**	µg/L	110.3	µg/L		
Chromium III	**323**	µg/L	1245.8	µg/L		
Chromium VI	**323**	µg/L	627	µg/L		
Copper	**242**	µg/L	46.5	µg/L		
Iron	**5000**	µg/L	---	µg/L		
Lead	**160**	µg/L	106.1	µg/L		
Mercury	**0.739**	µg/L	13.78	µg/L		
Nickel	**1450**	µg/L	103.2	µg/L		
Selenium	**235.8**	µg/L	886	µg/L		
Silver	**35.1**	µg/L	27.8	µg/L		
Zinc	**420**	µg/L	1067	µg/L		
Cyanide	**178**	mg/L	12.5	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7.97**	mg/L	---			
Phenol	**1,080**	µg/L	3738	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**		19.9	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	41.1	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	27.4	µg/L		

Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0473	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	249	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

StreamStats Report - Reservoir Woods East

Region ID: MA
Workspace ID: MA20210715134903955000
Clicked Point (Latitude, Longitude): 42.39719, -71.27376
Time: 2021-07-15 09:49:21 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	6.83	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.919	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.21	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.83	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.919	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.21	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	ASEp
7 Day 2 Year Low Flow	0.743	ft^3/s	0.274	1.94	49.5	49.5
7 Day 10 Year Low Flow	0.33	ft^3/s	0.0947	1.07	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Application Version: 4.6.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

HALEY & ALDRICH, INC.		**CALCULATIONS**	**FILE NO.**	**135544-003**	
			SHEET	**1** **of** **1**	
CLIENT	**ARE MA-Region 82., LLC**		**DATE**	**22-Jul-21**	
PROJECT	**RESERVOIR WOODS EAST**		**COMPUTED BY**	**KAL**	
SUBJECT	**DILUTION FACTOR CALCULATIONS**		**CHECKED BY**		

PURPOSE: Calculate Dilution Factor (DF) for project based on 7 Day 10 Year (7Q10) Low Flow values.

APPROACH: Calculate DF based on EPA formula $(Q_S + Q_D)/Q_D$, where Q_S is 7Q10 in million gallons per day (MGD) and Q_D is discharge flow in MGD.

ASSUMPTIONS:
1. 7Q10 is 0.33 cfs (from StreamStats 4.0)
2. A conversion of 7.48 is used to convert cubic feet to gallons
3. A maximum discharge flowrate of 100 gpm is assumed

CALCULATIONS:

7Q10 Low Flow Value (Q_S)

$$Q_S = \frac{0.33\ ft^3}{sec} \times \frac{7.48\ gallons}{ft^3} \times \frac{86{,}400\ sec}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

$$Q_S = 0.21 \text{ MGD}$$

Discharge Flowrate (Q_D)

$$Q_D = \frac{100\ gallons}{min} \times \frac{1{,}440\ min}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

$$Q_D = 0.144 \text{ MGD}$$

Dilution Factor (DF)

$$DF = \frac{Q_S + Q_D}{QD} = \frac{0.21\ MGD + 0.144\ MGD}{0.144\ MGD} = \mathbf{2.48}$$

CONCLUSION The dilution factor for this project is calculated to be **2.48** based on the provided 7Q10 low flow value and discharge flowrate.

Lamberti, Kate

From: Ruan, Xiaodan (DEP) <xiaodan.ruan@state.ma.us>
Sent: Tuesday, March 15, 2022 2:54 PM
To: Lamberti, Kate
Subject: RE: Reservoir Woods East - Dilution Factor and 7Q10

CAUTION: External Email

Hi Kate,

I can confirm the 7Q10 flow of 0.33 cfs for the receiving water Hobbs Brook and the dilution factor of 2.48 for the proposed discharge with a design flow of 100 pgm from the project site located at 40, 50, and 60 Sylvan Road, Waltham are correct.

Here is water quality information assisting you in filling out the NOI:

> Waterbody and ID: Hobbs Brook (segment MA72-46) within the Charles River Watershed
> Classification: A, Public Water Supply
> Outstanding Resource Water?: Yes
> State's most recent Integrated List is located here: https://www.mass.gov/doc/final-massachusetts-integrated-list-of-waters-for-the-clean-water-act-20182020-reporting-cycle/download, search for "MA72-46" to see the causes of impairments. (*Note: MassDEP finalized the 2018/2020 integrated List in February 2022, please use this latest list*.)
> TMDLs: there are no approved TMDLs for this segment.

If this is not a *current* MCP site, then in addition to submitting the NOI to EPA, you need to apply with MassDEP and submit a $500 fee (unless fee exempt, e.g., municipality) using ePLACE. Instructions on how to apply are located here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent and information on how to get ePLACE technical assistance is available on the ePLACE Portal webpage: https://eplace.eea.mass.gov/citizenaccess/.

Please let me know if you have any questions.

Thanks,
Xiaodan

Xiaodan Ruan
Environmental Engineer
Massachusetts Department of Environmental Protection
One Winter Street, Boston, MA 02108
(857)-256-4172
xiaodan.ruan@mass.gov

From: Lamberti, Kate <KLamberti@haleyaldrich.com>
Sent: Monday, March 14, 2022 11:50 AM
To: Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>
Subject: Reservoir Woods East - Dilution Factor and 7Q10

Hi Xiaodan,

Can you please confirm the 7Q10 of 0.33 and dilution factor of 2.48 based on the attached StreamStats report and calculations for a 100 gpm flow rate for the Reservoir Woods East project?

Thanks,
Kate

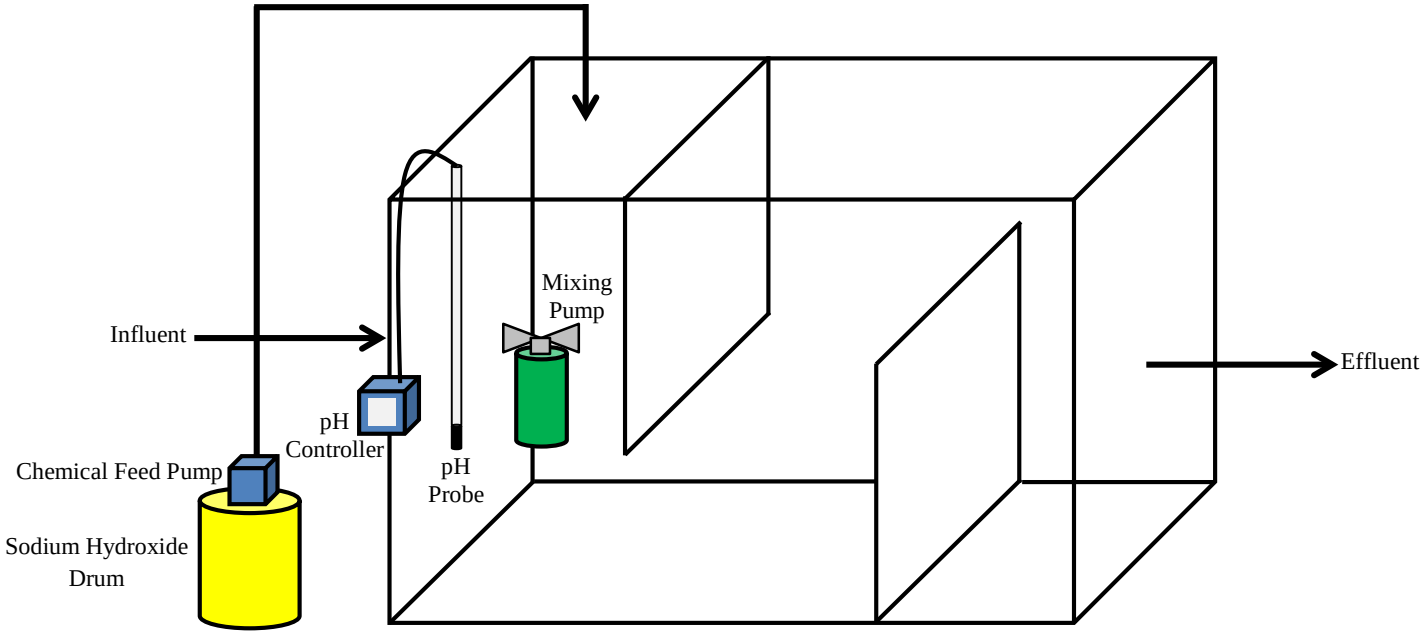
Kate Lamberti
Staff Engineer

Haley & Aldrich Inc.
465 Medford Street | Suite 2200
Charlestown, MA 02129

T: 617-886-7404
C: 860-808-6333
www.haleyaldrich.com

APPENDIX E

Contractor's Dewatering Submittal



Notes:

1.) Figure is not to scale.
2.) System layout can vary with site conditions.

89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

Configuration of pH Adjustment System

Job Safety Analysis

pH/Chem Feed System

Date: 5/10/2016
Completed By: Tammie Hagie
Approved By: Mike Deso

Required PPE: Hard Hat, Safety Toe Boots, Reflective Vest, Safety Glasses, Chemical Resistant Gloves

TASK	POTENTIAL RISK/HAZARD	CONTROLS
Transporting acid/chemical drum	Splash, spill, heavy lifting	Inspect condition of drum prior to transportation. Use material handling devices when possible to move equipment (lift gates, pallet jacks, hand trucks, etc.). If necessary, use a ramp for loading/unloading wheeled devices, ensuring the ramp is properly supported prior to use. Lift with your knees and use drum dolly. Make sure drum is secure in vehicle prior to transportation. Review SDS on acid/chemical. Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye.
Opening acid drum	Splash, spill	Review MSDS on acid/chemical. Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye. Use bung wrench to open the drum properly.
Set up chemical feed pump	Splash, spill, leak	Wear proper PPE and dispose of materials after clean up in a sealed container. Immediately use the eye wash station if acid or chemical comes in contact with your eye. Monitor chem feed pump to assure its working and not leaking. Use chemical resistant tubing to transport liquid from the pump.
Notes:		

Note any changes/deviations to this JSA

Lockwood Remediation Technologies, LLC

One Controller for the Broadest Range of Sensors.

Choose from 30 digital and analog sensor families for up to 17 di:erent parameters.

Maximum Versatility

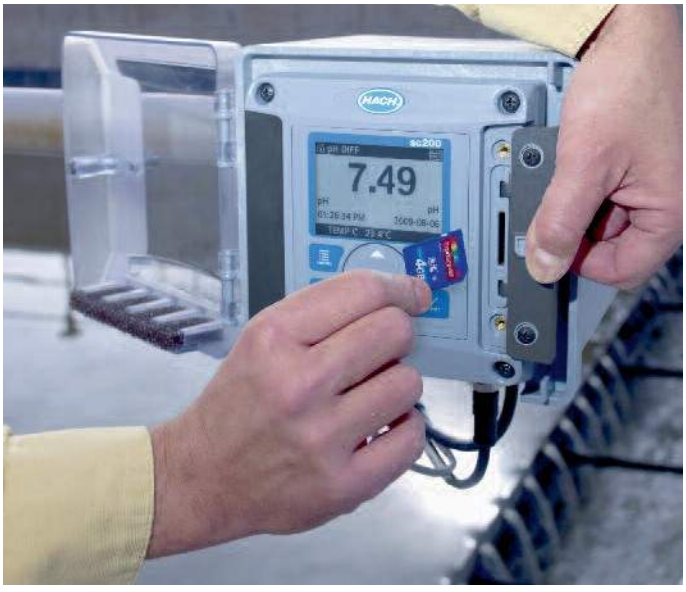
The sc200 controller allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with Hach's broad range of sensors, eliminating the need for dedicated, parameter-specific controllers.

Ease of Use and Confidence in Results

Large, high-resolution, transreflective display provides optimal viewing resolution in any lighting condition. Guided calibration procedures in 19 languages minimize complexity and reduce operator error. Password-protected SD card reader o:ers a simple solution for data download and transfer. Visual warning system provides critical alerts.

Wide Variety of Communication Options

Utilize two to five analog outputs to transmit primary and secondary values for each sensor, or integrate Hach sensors and analyzers into MODBUS RS232/RS485, Profibus® DP, and HART networks.



Password protected SD card reader offers a simple solution for data download and transfer, and sc200 and digital sensor configuration file duplication and backup.

Controller Comparison

Features	Previous Models sc100™ Controller	Previous Models GLI53 Controller	sc200™ Controller	Benefits
Display	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective	• Improved user interface—50% bigger • Easier to read in daylight and sunlight
Data Management	irDA Port/PDA Service Cable	N/A	SD Card Service Cable	• Simplifies data transfer • Standardized accessories/max compatibility
Sensor Inputs	2 Max Direct Digital Analog via External Gateway	2 Max Analog Depending on Parameter	2 Max Digital and/or Analog with Sensor Card	• Simplifies analog sensor connections • Works with analog and digital sensors
Analog Inputs	N/A	N/A	1 Analog Input Signal Analog 4-20mA Card	• Enables non-sc analyzer monitoring • Accepts mA signals from other analyzers for local display • Consolidates analog mA signals to a digital output
4-20 mA Outputs	2 Standard	2 Standard	2 Standard Optional 3 Additional	• Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input
Digital Communication	MODBUS RS232/RS485 Profibus DP V1.0	HART	MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2	• Unprecedented combination of sensor breadth and digital communication options

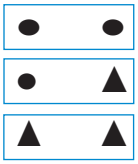
Choose from Hach's Broad Range of Digital and Analog Sensors

Parameter	Sensor	Digital or Analog
Ammonia	AMTAX™ sc, NH4D sc, AISE sc, AN-ISE sc	●
Chlorine	CLF10 sc, CLT10 sc, 9184 sc	●
Chlorine Dioxide	9185 sc	●
Conductivity	GLI 3400 Contacting, GLI 3700 Inductive	▲
Dissolved Oxygen	LDO® Model 2, 5740 sc	●
Dissolved Oxygen	5500	▲
Flow	U53, F53 Sensors	▲
Nitrate	NITRATAX™ sc, NO3D sc, NISE sc, AN-ISE sc	●
Oil in Water	FP360 sc	●
Organics	UVAS sc	●
Ozone	9187 sc	●
pH/ORP	pHD	●
pH/ORP	pHD, pH Combination, LCP	▲
Phosphate	PHOSPHAX™ sc	●
Sludge Level	SONATAX™ sc	●
Suspended Solids	SOLITAX™ sc, TSS sc	●
Turbidity	1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc, TSS sc	●
Ultra Pure Conductivity	8310, 8311, 8312, 8315, 8316, 8317 Contacting	▲
Ultra Pure pH/ORP	8362	▲

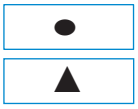
● = Digital ▲ = Analog

Connect up to two of any of the sensors listed above, in any combination, to meet your application needs. The diagrams below demonstrate the potential configurations. Operation of analog sensors requires the controller to be equipped with the appropriate sensor module. Contact Hach Technical Support for help with selecting the appropriate module.

2 Channel Configurations



1 Channel Configurations



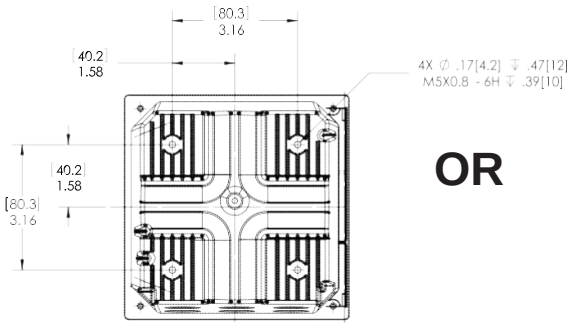
Specifications*

Dimensions (H x W x D)	5.7 in x 5.7 in x 7.1 in (144 mm x 144 mm x 181 mm)
Display	Graphic dot matrix LCD with LED backlighting, transreflective
Display Size	1.9 x 2.7 in. (48 mm x 68 mm)
Display Resolution	240 x 160 pixels
Weight	3.75 lbs. (1.70 kg)
Power Requirements (Voltage)	100 - 240 V AC, 24 V DC
Power Requirements (Hz)	50/60 Hz
Operating Temperature Range	-20 to 60 °C , 0 to 95% RH non-condensing
Analog Outputs	Two (Five with optional expansion module) to isolated current outputs, max 550 Ω , Accuracy: ± 0.1% of FS (20mA) at 25 °C, ± 0.5% of FS over -20 °C to 60 °C range Operational Mode: measurement or calculated value
Analog Output Functional Mode	Linear, Logarithmic, Bi-linear, PID
Security Levels	2 password-protected levels
Mounting Configurations	Wall, pole, and panel mounting
Enclosure Rating	NEMA 4X/IP66
Conduit Openings	1/2 in NPT Conduit
Relay: Operational Mode	Primary or secondary measurement, calculated value (dual channel only) or timer
Relay Functions	Scheduler (Timer), Alarm, Feeder Control, Event Control, Pulse Width Modulation, Frequency Control, and Warning
Relays	Four electromechanical SPDT (Form C) contacts, 1200 W, 5 A
Communication	MODBUS RS232/RS485, PROFIBUS DPV1, or HART 7.2 optional
Memory Backup	Flash memory
Electrical Certifications	EMC CE compliant for conducted and radiated emissions: - CISPR 11 (Class A limits) - EMC Immunity EN 61326-1 (Industrial limits) Safety cETLus safety mark for: - General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1 - Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors cULus safety mark - General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

**Subject to change without notice.*

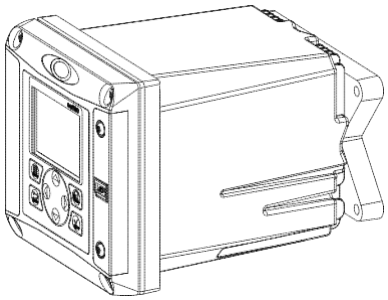
Dimensions

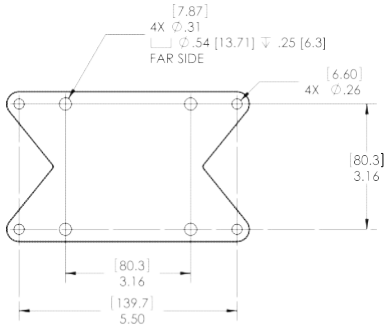
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

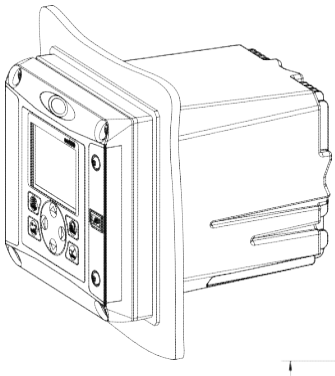
OR

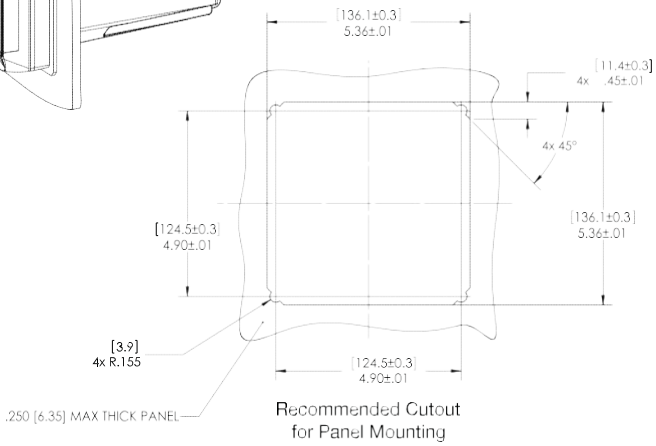




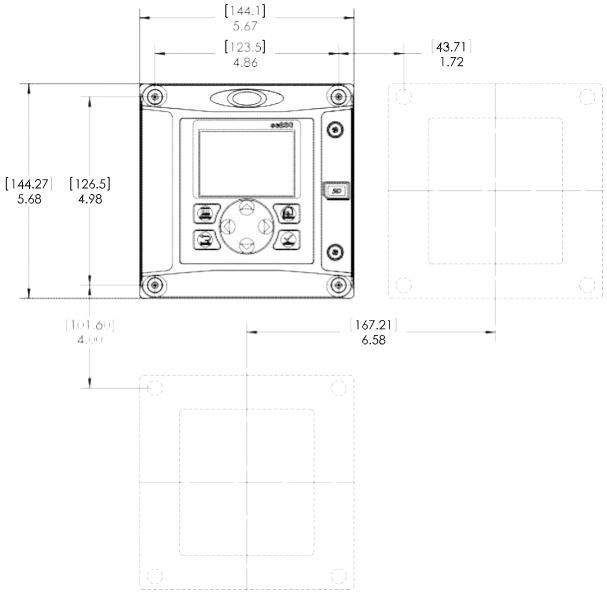
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield
p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



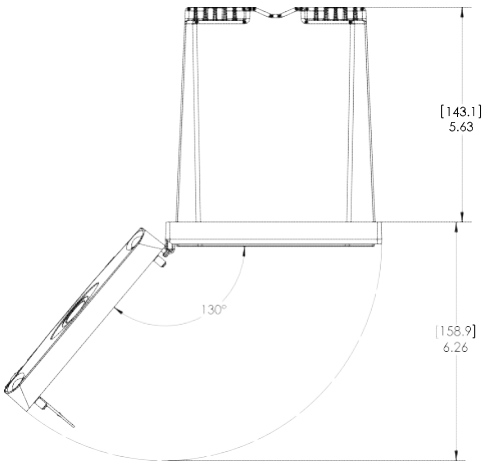


Recommended Cutout
for Panel Mounting

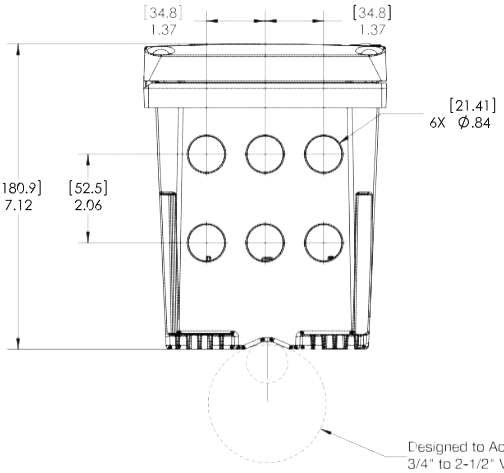


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views

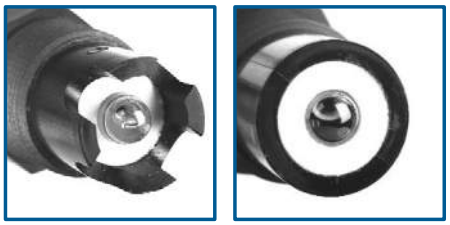


Door Opening Details



3/4-inch Combination pH and ORP Sensor Kits

Use the Digital Gateway to make any Hach analog combination pH or ORP sensor compatible with the Hach sc1000 Controller.



Digital combination pH and ORP sensors are available in convertible, insertion, and sanitary mounting styles. Choose from rugged dome electrodes or "easy-to-clean" flat glass electrodes.

Features and Benefits

Low Price—High Performance

These combination sensors are designed for specialty applications for immersion or in-line mounting. The reference cell features a double-junction design for extended service life, and a built-in solution ground. The body is molded from chemically-resistant Ryton® or PVDF, and the reference junction is coaxial porous Teflon®. All sensors are rated 0 to 105ºC up to 100 psig, and have integral 4.5 m (15 ft.) cables with tinned leads. The PC-series (for pH) and RC-series (for ORP) combination sensors are ideal for measuring mild and aggressive media.

Special Electrode Configurations

Sensors with rugged dome electrodes, "easy-to-clean" flat glass electrodes, and even HF (hydrofluoric acid) resistant glass electrodes are available for a wide variety of process solutions.

Temperature Compensation Element Option

The PC-series combination pH sensors are available with or without a Pt 1000 ohm RTD temperature element. The RC-series combination ORP sensors are supplied without a temperature element.

Versatile Mounting Styles

Sensors are available in three mounting styles—convertible, insertion, and sanitary. Please turn to page 3 for more information.

Full-Featured "Plug and Play" Hach sc Digital Controllers

There are no complicated wiring or set up procedures with any Hach sc controller. Just plug in any combination of Hach digital sensors and it's ready to use—it's "plug and play."

One or multiple sensors—The sc controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications—Multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital MODBUS® (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

Data logger—A built-in data logger collects measurement data, calibration, verification points, and alarm history.

Specifications*

Most pH applications fall in the 2.5-12.5 pH range. General purpose pH glass electrodes perform well in this range. Some industrial applications require accurate measurements and control at pH values below 2 or above 12. Consult Hach Technical Support for details on these applications.

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable (plus two conductors for temperature compensator option); 4.5 m (15 ft.) long

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

Common materials for all sensor styles include PTFE Teflon double junction, glass process electrode, and Viton® O-rings

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable; 4.5 m (15 ft.) long; terminated with stripped and tinned wires

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Common materials for all sensor styles include PTFE Teflon double junction, glass with platinum process electrode, and Viton® O-rings

Warranty
90 days

**Specifications subject to change without notice.*

Engineering Specifications

1. The pH sensor shall be available in convertible, insertion or sanitary styles. The ORP sensor shall be available in only convertible or insertion styles.
2. The convertible style sensor shall have a Ryton® body. The insertion style sensor shall have a PVDF body. The sanitary style sensor shall have a 316 stainless steel sleeved PVDF body. Common materials for all sensor styles shall include a PTFE Teflon® double junction, and Viton® O-rings. The pH sensor shall have a glass pH electrode. The ORP sensor shall have a platinum ORP electrode.
3. The convertible style pH sensor shall be available with or without a built-in Pt 1000 ohm RTD temperature element. Insertion and sanitary style pH sensors shall have a built-in Pt 1000 ohm RTD temperature element. Convertible and insertion style ORP sensors shall not have a built-in temperature element.
4. The sensor shall communicate via MODBUS® RS-485 to a Hach sc Digital Controller.
5. The sensor shall be Hach Company Model PC sc or PC-series for pH measurement or Model PC sc or RC-series for ORP measurement.

Dimensions

Convertible Style Sensor

The convertible style sensor has a Ryton® body that features 3/4-inch NPT threads on both ends. The sensor can be directly mounted into a standard 3/4-inch pipe tee for flow-through mounting or fastened onto the end of a pipe for immersion mounting. The convertible style sensor enables inventory consolidation, thereby reducing associated costs. Mounting tees and immersion mounting hardware are offered in a variety of materials to suit application requirements.

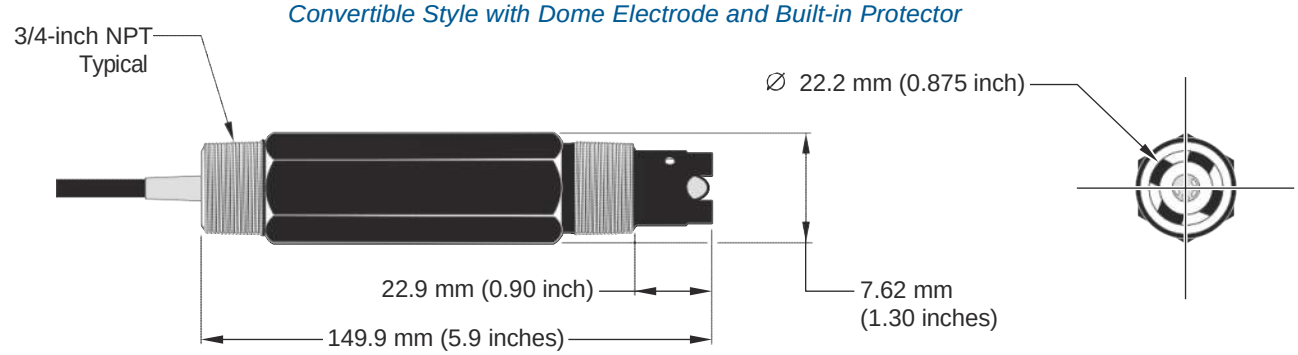
Insertion Style Sensor

Insertion style sensors feature a longer, non-threaded PVDF body with two Viton® O-rings, providing a seal when used with the optional Hach insertion mount hardware assembly. This ball valve hardware enables sensor insertion and retraction from a pipe or vessel without having to stop the process flow.

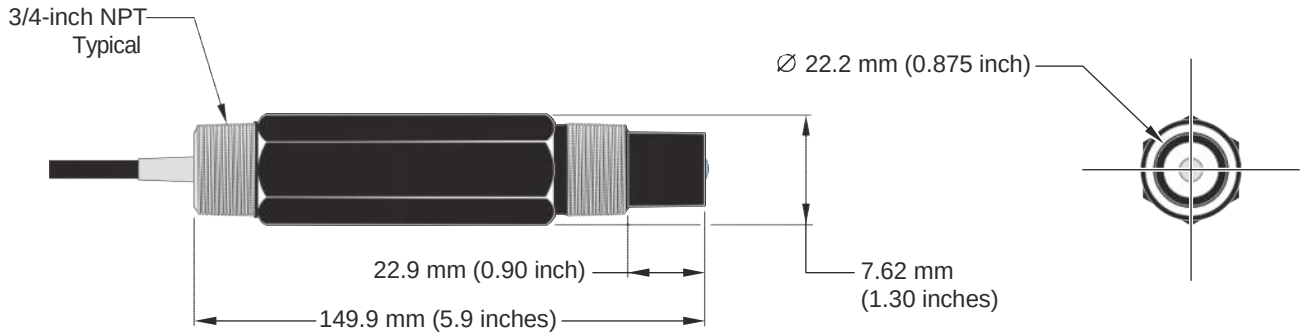
Sanitary Style Sensor

The sanitary style sensor, offered for pH measurement, has a 316 stainless steel-sleeved PVDF body with a 2-inch flange. The sensor mates to a standard 2-inch Tri-Clover fitting. The optional Hach sanitary mounting hardware includes a standard 2-inch sanitary tee, sanitary clamp, and Viton® sanitary gasket.

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



Lockwood Remediation Technologies, LLC

The Pulsatron Series A Plus offers manual function controls over stroke length and stroke rate as standard with the option to select external pace for automatic control.

Ten distinct models are available, having pressure capabilities to 250 PSIG (17 BAR) @ 12 GPO (1.9 lph), and flow capacities to 58 GPO (9.1 lph) @ 100 PSIG (7.0 BAR), with a standard turndown ratio of 100:1, and optional ratio of 1000:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Features

- Manual Control by on-line adjustable stroke rate and stroke length.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Internally Dampened To Reduce Noise.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Few Moving Parts and Wall Mountable.
- Safe & Easy Priming with durable leak-free bleed valve assembly (standard).
- Optional Control: External pace with auto/manual selection.

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

Controls Options		
Feature	Standard Configuration	Optional Configuration [1]
External Pacing	--	Auto / Manual Selection
External Pace w/ Stop (125 SPM only)	--	Auto / Manual Selection [2]
Manual Stroke Rate	10:1 Ratio	100:1 Raio
Manual Stroke Length	10:1 Ratio	10:1 Ratio
Total Turndown Ratio	100:1 Ratio	1000:1 Ratio

Note 1: On S2, S3 & S4 sizes only.

Note 2: Not available on 1000:1 turndown pumps.

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

Series A Plus
Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <;N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1.14" ID X 3.18" OD						3.18" D X 1.12" OD	1.14" D X 3.18" OD		
		Pioina	1.14" FNPT									
Strokes/Minute		SPM	125							250		

Note 3: Pumps with rated pressure above 150 PSI will be de-rated to 150 PSI Max. when selecting certain valve options, see Price Book for details.

Engineering Data

Pump Head Materials Available:	GFPPL
	PVC
	PVDF
	316 SS
Diaphragm:	PTFE-faced CSPE-backed
Check Valves Materials Available:	
Seats/0-Rings:	PTFE
	CSPE
	Viton
Balls:	Ceramic
	PTFE
	316 SS
	Alloy C
Fittings Materials Available:	GFPPL
	PVC
	PVDF
Bleed Valve:	Same as fitting and check valve selected, except 316SS
Injection Valve & Foot Valve Assy:	Same as fitting and check valve selected
Tubing:	Clear PVC
	White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility:	+/- 3% at maximum capacty
Viscosity Max CPS:	1000 CPS
Stroke Frequency Max SPM:	125 / 250 by Model
Stroke Frequency Turn-Down Ratio:	10:1 / 100:1 by Model
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	0.6 Amps
@ 230 VAC; Amps:	0.3 Amps
Peak hput Power:	130 Watts
Average Input Power @ Max SPM:	50 Watts

Custom Engineered Designs - Pre-Engineered Systems

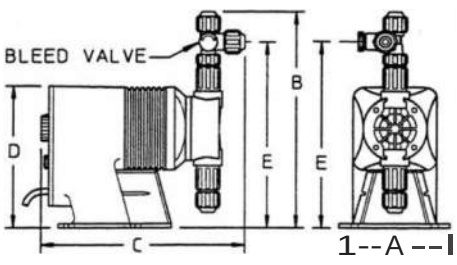
Pre-Engineered Systems

Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HOPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02 IS2	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03 IS3	5.0	9.9	9.5	6.5	8.5	10
LB0B4	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 cm



95-Gallon OverPack - 32" dia x 41.5", 1 each/package

Stock a SpillTech® OverPack with sorbents for emergency spill response, or use it as a salvage drum to ship damaged containers or hazardous waste.

- DOT-Approved for Salvage: All SpillTech® OverPacks are DOT-approved and X-rated for use as salvage drums. Helps companies conform to federal regulations when shipping damaged or leaking containers of hazardous materials, or absorbents contaminated with hazardous substances.
- Perfect for Spill Kits: Stores sorbent products (not included) for easy access as needed for spill control. Saves time when quick response is necessary.
- Sturdy Construction: 100% polyethylene OverPack resists chemicals, rust and corrosion for years of use. Integrated handles make them easy to lift, move or carry with standard material handling equipment. Twist-on, double-wall lid with closed-cell gasket provides sealed, secure closure to prevent leaks and protect contents from moisture, dirt and damage. Durable to withstand rough handling.
- Customized for You: We can customize a Spill Kit to your exact specifications, including the container, its contents and accessories, with no upcharge! Contact your local Distributor for details.

A95OVER Specifications

Dimensions:	ext. dia. 32" x 41.5" H
Shipping Dimensions:	31.75" W x 41.5" L x 31.75" H
Sold as:	1 per package
Color:	Yellow
Composition:	Polyethylene
# per Pallet:	3
Incinerable:	No
Ship Class:	250

Metric Equivalent Specifications

Dimensions:	ext. dia. 81.3cm x 105.4cm H
Shipping Dimensions:	80.6cm W x 105.4cm L x 80.6cm H

A95OVER Technical Information

Warnings & Restrictions:
There are no known warnings and restrictions for this product.

Regulations and Compliance:
49 CFR 173.3(c)(1) - If a container of hazardous waste is damaged or leaking, it can be placed in a compatible salvage drum that meets UN criteria for shipping

49 CFR 173.12(b)(2)(iv) - When labpacking, "Inner packagings…must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents."

49 CFR 173.12(b) - A container used for labpacking must be "a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids."

SAFETY DATA SHEET

Creation Date 16-Jun-2009 **Revision Date** 07-Aug-2015 **Revision Number** 8

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identification

Product Description:	**Sodium hydroxide**
Cat No. :	**SP/1238/25**
Synonyms	Caustic soda
CAS-No	1310-73-2
EC-No.	215-185-5
Molecular Formula	H Na O
Reach Registration Number	01-2119457892-27

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

Recommended Use	Laboratory chemicals.
Sector of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company	Fisher Scientific UK Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom
E-mail address	begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Tel: 01509 231166
Chemtrec US: (800) 424-9300
Chemtrec EU: 001 (202) 483-7616

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Substances/mixtures corrosive to metal	Category 1

Health hazards

Skin Corrosion/irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1

Environmental hazards
Based on available data, the classification criteria are not met

2.2. Label elements

Signal Word **Danger**

Hazard Statements

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage

Precautionary Statements

P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower

2.3. Other hazards

No information available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Sodium hydroxide	1310-73-2	EEC No. 215-185-5	100	Skin Corr. 1A (H314) Eye Dam. 1 (H318) Met. Corr. 1 (H290)

Reach Registration Number	01-2119457892-27

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

Ingestion Do not induce vomiting. Immediate medical attention is required. Never give anything by mouth to an unconscious person. Drink plenty of water.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Call a physician or Poison Control Center immediately.

Protection of First-aiders Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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

Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

Notes to Physician Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
CO_2, dry chemical, dry sand, alcohol-resistant foam.

Extinguishing media which must not be used for safety reasons
No information available.

5.2. Special hazards arising from the substance or mixture

The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Sodium oxides, Hydrogen.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Evacuate personnel to safe areas. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions

Do not allow material to contaminate ground water system. Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear personal protective equipment. Use only under a chemical fume hood. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Do not ingest.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component	European Union	The United Kingdom	France	Belgium	Spain
Sodium hydroxide		2 mg/m³ STEL	TWA / VME: 2 mg/m³ (8 heures).	2 mg/m³ VLE	STEL / VLA-EC: 2 mg/m³ (15 minutos).

Component	Italy	Germany	Portugal	The Netherlands	Finland
Sodium hydroxide		2 mg/m³ TWA (inhalable fraction)	Ceiling: 2 mg/m³		STEL: 2 mg/m³ 15 minuutteina Ceiling: 2 mg/m³

Component	Austria	Denmark	Switzerland	Poland	Norway
Sodium hydroxide	MAK-KZW: 4 mg/m³ 15 Minuten MAK-TMW: 2 mg/m³ 8 Stunden	Ceiling: 2 mg/m³	STEL: 2 mg/m³ 15 Minuten TWA: 2 mg/m³ 8 Stunden	STEL: 1 mg/m³ 15 minutach TWA: 0.5 mg/m³ 8 godzinach	Ceiling: 2 mg/m³

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Sodium hydroxide	TWA: 2.0 mg/m³	STEL-KGVI: 2 mg/m³ 15 minutama.	STEL: 2 mg/m³ 15 min		TWA: 1 mg/m³ 8 hodinách. Ceiling: 2 mg/m³

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Sodium hydroxide	TWA: 1 mg/m³ 8 tundides. Ceiling: 2 mg/m³		STEL: 2 mg/m³ TWA: 2 mg/m³	STEL: 2 mg/m³ 15 percekben. CK TWA: 2 mg/m³ 8 órában. AK	STEL: 2 mg/m³

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Sodium hydroxide	TWA: 0.5 mg/m³	Ceiling: 2 mg/m³			

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Sodium hydroxide		TWA: 2 mg/m³	TWA: 2 mg/m³ 8 urah inhalable fraction STEL: 2 mg/m³ 15 minutah inhalable fraction	LLV: 1 mg/m³ 8 timmar. inhalable dust CLV: 2 mg/m³	

Biological limit values
This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of

exposure to chemical and biological agents.
MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust

Derived No Effect Level (DNEL) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				
Inhalation	1 mg/m³			

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Measures
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Neoprene	> 480 minutes	0.45 mm	Level 6	As tested under EN374-3 Determination of
Butyl rubber	> 480 minutes	0.35 mm	EN 374	Resistance to Permeation by Chemicals
Viton (R)	> 480 minutes	0.30 mm		

Skin and body protection Long sleeved clothing

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Particulates filter conforming to EN 143

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Prevent product from entering drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance White
Physical State Solid

Odor	Odorless	
Odor Threshold	No data available	
pH	14	(5 %)
Melting Point/Range	318 °C / 604.4 °F	
Softening Point	No data available	
Boiling Point/Range	1390 °C / 2534 °F	@ 760 mmHg
Flash Point	No information available	**Method -** No information available
Evaporation Rate	Not applicable	Solid
Flammability (solid,gas)	Not flammable	
Explosion Limits	No data available	
Vapor Pressure	1 mbar @ 700 °C	
Vapor Density	Not applicable	Solid
Specific Gravity / Density	No data available	
Bulk Density	2.13 g/cm3	
Water Solubility	Completely soluble	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Autoignition Temperature		
Decomposition Temperature	No data available	
Viscosity	Not applicable	Solid
Explosive Properties	Not explosive	
Oxidizing Properties	No information available	

9.2. Other information

Molecular Formula	H Na O
Molecular Weight	40

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Yes
Contact with metals may evolve flammable hydrogen gas

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat.

10.5. Incompatible materials

Strong oxidizing agents. Acids. Metals. Water. . Alcohols.

10.6. Hazardous decomposition products

Sodium oxides. Hydrogen.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information No acute toxicity information is available for this product

(a) acute toxicity;

Oral	Based on available data, the classification criteria are not met
Dermal	Based on available data, the classification criteria are not met
Inhalation	Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hydroxide		1350 mg/kg (Rabbit)	

(b) skin corrosion/irritation; Category 1 A

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;
Respiratory Based on available data, the classification criteria are not met
Skin Based on available data, the classification criteria are not met

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

Mutagenic effects have occurred in experimental animals

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Based on available data, the classification criteria are not met

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs Eyes, Skin, Respiratory system, Gastrointestinal tract (GI).

(j) aspiration hazard; Not applicable
Solid

Other Adverse Effects See actual entry in RTECS for complete information

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
Ecotoxicity effects Do not empty into drains. Contains a substance which is:. Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Sodium hydroxide	45.4 mg/L LC50 96 h			

12.2. Persistence and degradability
Persistence Soluble in water, Persistence is unlikely, based on information available.
Degradability Not relevant for inorganic substances.
Degradation in sewage treatment plant Neutralization is normally necessary before waste water is discharged into water treatment plants. Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

12.3. Bioaccumulative potential Does not bioaccumulate; Bioaccumulation is unlikely

12.4. Mobility in soil The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

12.5. Results of PBT and vPvB assessment No data available for assessment.

12.6. Other adverse effects

Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors
Persistent Organic Pollutant	This product does not contain any known or suspected substance
Ozone Depletion Potential	This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products	Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.
Contaminated Packaging	Dispose of this container to hazardous or special waste collection point.
European Waste Catalogue (EWC)	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
Other Information	Do not dispose of waste into sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms. Solutions with high pH-value must be neutralized before discharge.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number	UN1823
14.2. UN proper shipping name	Sodium hydroxide, solid
14.3. Transport hazard class(es)	8
14.4. Packing group	II

ADR

14.1. UN number	UN1823
14.2. UN proper shipping name	Sodium hydroxide, solid
14.3. Transport hazard class(es)	8
14.4. Packing group	II

IATA

14.1. UN number	UN1823
14.2. UN proper shipping name	Sodium hydroxide, solid
14.3. Transport hazard class(es)	8
14.4. Packing group	II

14.5. Environmental hazards	No hazards identified
14.6. Special precautions for user	No special precautions required
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories X = listed

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Sodium hydroxide	215-185-5	-		X	X	-	X	X	X	X	X

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Sodium hydroxide	WGK 1	

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.
Take note of Dir 94/33/EC on the protection of young people at work
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

SECTION 16: OTHER INFORMATION

Full Text of H-/EUH-Statements Referred to Under Section 3
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
PNEC - Predicted No Effect Concentration
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - Volatile Organic Compounds

Key literature references and sources for data
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Chemical incident response training.

Creation Date 16-Jun-2009
Revision Date 07-Aug-2015
Revision Summary Update to Format.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information

relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet

Operating Pressures

When clean the bag filter houses will typically start with a 1 - 2psig differential pressure across them. When the differential pressure reaches 10psig between the inlet and outlet the bag is dirty and should be changed to prevent reduced flow. The bag filters are set up with isolation valves so that it is not necessary to stop operation while changing one bag at time.

The carbon vessels are equipped with inlet and outlet pressure gauges so that the condition of the carbon bed can be determined to be free of unwanted dirt and clogging. Typical pressure drop across a clean bed of carbon should be in the 3 – 5 psig range. If the inlet pressure goes up significantly the carbon bed has become fouled. It is possible to backflush with CLEAN water to get this dirt out, but if dirty water is used the problem will only be compounded.

O & M Contents

In the following pages there are diagrams of the piping arrangement for "SEQUENCE 1" and "SEQUENCE 2" operation. This is followed by a manual and parts list for the Rosedale bag filter, and AXIS Products trailer axles. An operation and maintenance manual from TIGG has been provided on similar type vessels to those found on the CFS 6150 Mobile Filtration unit. This is provided to further round out the many nuances of proper carbon vessel operation and maintenance.

CARBON FILTRATION SYSTEMS, Inc.

Model 6150 Mobile Treatment System

The Mobile Treatment System model 6150 is designed to for sustained flows of 150 gpm. Optimum contact time between influent and carbon media is obtained at this 150 gpm flow rate. Operation at higher flow rates will reduce effectiveness of carbon to remove contaminates allowing them to pass through the system to drain.

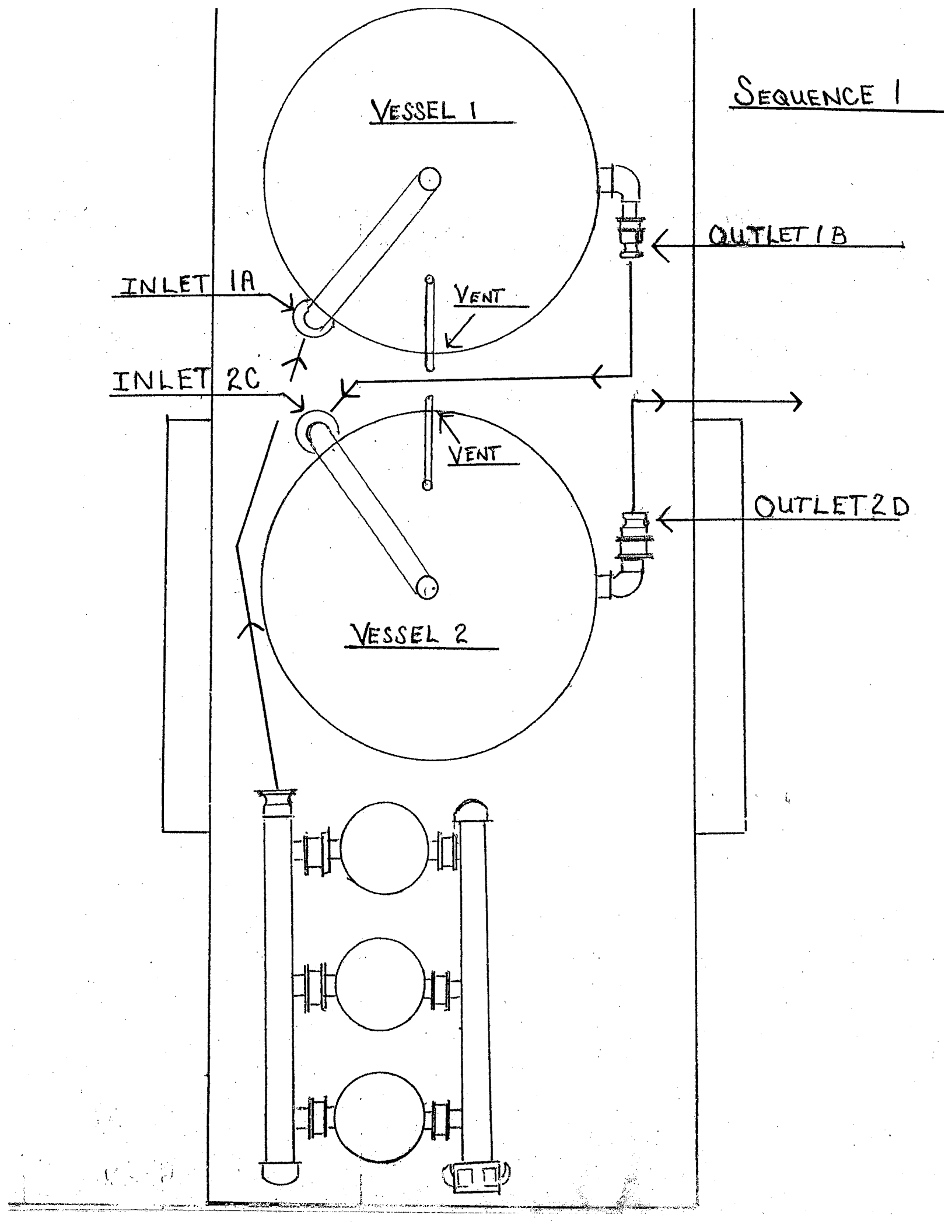
The system is mounted on a 12,230lb GVWR / 9600lb LC equipment hauler manufactured by Superior Trailers of Georgia. The main frame is 7" channel with two (2) 6000lb brake axles. There are four (4) 12000lb drop leg jackets with one mounted in each corner of the trailer. The combined dry weight of the two (2) 3000lb carbon adsorbers fully loaded with 3000lbs of granular carbon per vessel and the Tri-plex bag filter system is approximately 9,7750lbs. When fully loaded and saturated with water the combined loaded weight is nearly 21,100lbs. For this reason all four 12000lb drop leg jacks must be in the fully down position when systems is in operation to prevent main frame damage. In addition it is recommended that the system be fully drained before attempting to move trailer to a new location. Failing to do so could result in damage to the axles, as well as, other structural components.

Deaerating

Prior to start up of system the carbon vessels must be filled with "clean" water. Since hydrant water is not always available the cleanest water available will generally do. This step is necessary to allow the activated carbon to de-gas and become thoroughly wetted. The escaping gas must be vented off through the ¾" vent pipe coming off the top and running down between the two carbon vessels. The recommended time period for this is a full 24 hours to ensure all of the minute pores have been evacuated of air and the carbon completely wetted. This is often hard to do under actual field conditions, but the longer it is allowed to stand before start up the better the result will be.

Vessel SEQUENCE

The carbon vessels are set up in series in a lead / lag sequence. This allows the maximum time exposure to the carbon bed and when breakthrough does occur the second vessel in series will afford protection against dumping raw VOCs into the drain. Each vessel is set up with sample ports top and bottom allowing for influent samples to be drawn before and between the vessels, as well as, downstream of the second vessel. When break through does occur after the first vessel it is necessary to schedule a change out of spent media and replenish it with new. The sequence of the vessels is changed from "sequence 1" to "sequence 2" by moving the inlet hose from the first vessel (inlet 1A) to the inlet of the second vessel (inlet 2C). The corresponding outlet hose off the first vessel must also be moved from outlet 1B to outlet 2D. Vessel 2 now becomes the "lead" vessel. An additional piece of 3" x 12' hose has been provided to allow a smooth transition from the final outlet to a layflat hose that typically is used for longer hose runs to drains and other distant outfall locations.


SEQUENCE 1
VESSEL 1
OUTLET 1B
INLET 1A
VENT
INLET 2C
VENT
OUTLET 2D
VESSEL 2

TIGG® corporation

800 Old Pond Road, Suite 706
Bridgeville, PA 15017
(412)257-9580 ~ (412)257-8520 fax
www.tigg.com

Operation and Maintenance Manual for CANSORB and Econosorb-L Liquid Phase Units

CONTENTS PAGE

1.0 GENERAL

The liquid flow through the CANSORB adsorbers is downflow. Aqueous and non-aqueous liquids can be treated using granular activated carbon. For most efficient utilization of the carbon two vessels should be used in series operation.

If media other than carbon is to be used, contact a TIGG representative for any procedural changes.

2.0 INSTALLING THE CANSORB AND ECONOSORB-L UNITS

2.1 Unloading

Following are the empty and loaded weights of the CANSORB units. This information will dictate what equipment should be used to lift and place the vessel.

UNIT	Empty Wt.	Filled Wt.
C35	750	1410
C50	1040	2040
C75	1470	3470
C100	1790	4750
C200	2440	8440
C500	6500	14500
EL-500	900	1400
EL-1000	1250	2250
EL-2000	1600	3600
EL-3000	2490	5490

If a forklift is used the fork tubes on the unit should be used. If a crane is used it is advisable to use a properly sized spreader beam and lifting cables. **Do not use the lifting lugs to lift a vessel containing wet carbon.** They are not designed for that weight.

2.2 Setup

The CANSORB unit should be placed on a level concrete pad or other support. Connect the piping or hoses to the inlet and outlet flanges or nozzles. Install any gages or other appurtenances that were shipped with the system.

See Sections 4.3 & 4.4 relating to the effluent piping.

3.0 STARTUP PROCEDURES

After the CANSORB unit (s) have been set in place and the piping is installed (See Section 4.0) they are ready to be filled with the media unless they were shipped with the media in place.

Filtration Trailer Equipment List

3) Rosedale simplex bag filter units Model # NCO8-30-2P-*-150-C-B-PB

2) TIGG 3000lb medium pressure carbon adsorbers.

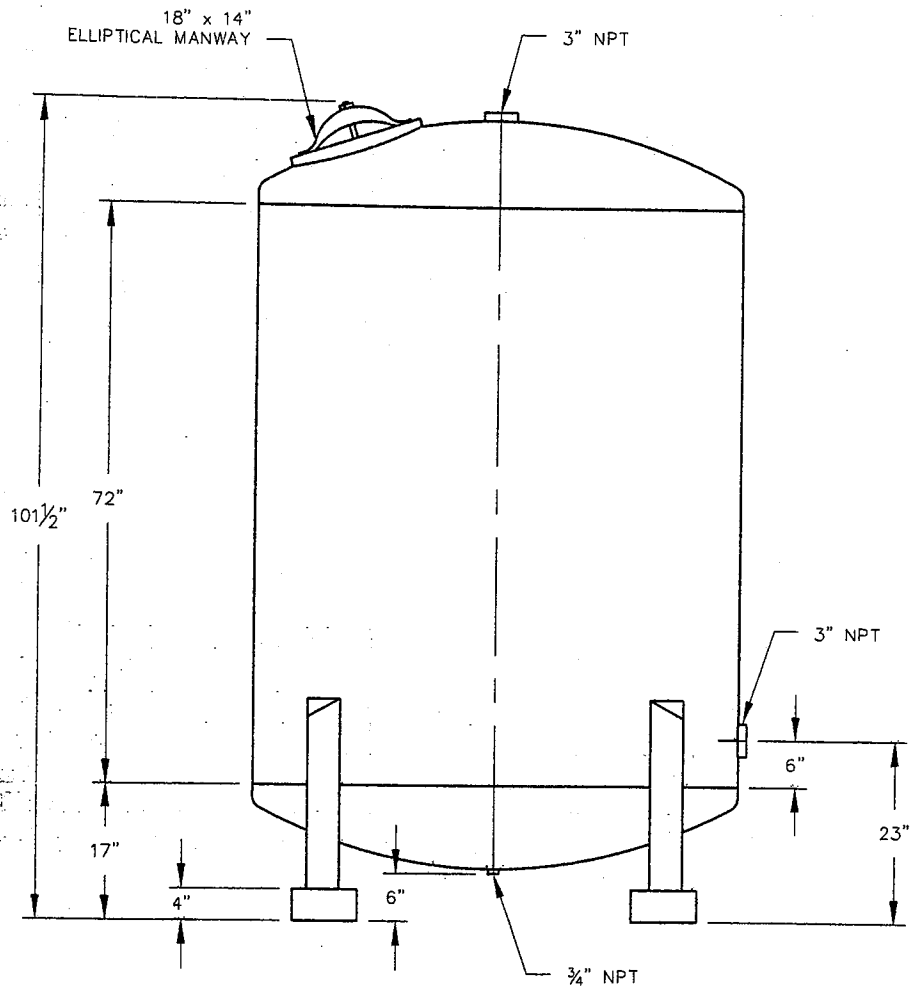
1) Superior Trailers 12,232lb GVWR trailer equipped with two (2) 6000lb AXIS Products brake axles.

4) Legend Mfg. 3" Butterfly valves model T-335AB with EPBM seat, Aluminum/Bronze construction

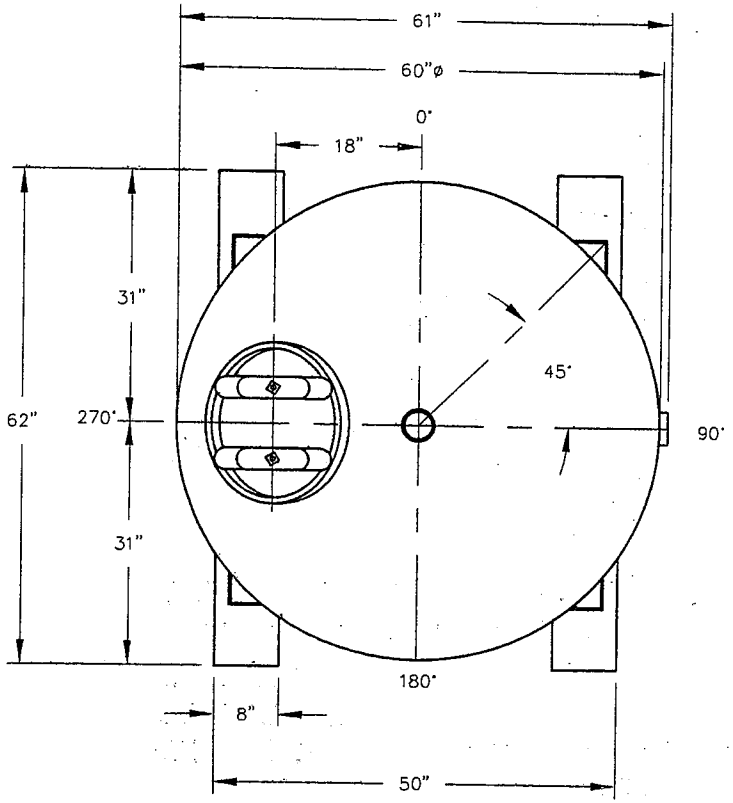
6) Legend Mfg. 2" Butterfly valves model T-335AB with EPDM seat, Aluminum/Bronze construction.

10) 0 – 60 psi, 2.5" pressure gauges

3) 3" x 12' EPDM rubber water hose with camlock fittings.



ELEVATION



PLAN

VESSEL STANDARDS

VESSEL MATERIALS : A-36 CARBON STEEL	LIQUID DRAIN ASSEMBLY : 3/4" NPT
LINING : EPOXY	VOLUME OF VESSEL : 109.1 FT^3
EXTERIOR PAINT : ENAMEL	STANDARD CARBON FILL : 3000 LBS
HEAD THICKNESS : 1/4"	SHIP WT. STD.FILL : 4700 LBS
SHELL THICKNESS : 1/4"	CARBON TYPE : N/A
INTERNALS : PVC	MAX. OPERATING PRESSURE : 75 PSI
ADSORBENT OUTLET ASSEMBLY : 18" x 14" ELL. MANWAY	MAX. OPERATING TEMP. : 125°F

NO.	REVISION	BY	DATE

PROJECT

PROJ. NO.	E07-045-AM
P.O. NO.	
DRAWN BY	JB
DESIGN BY	BB
CHKD. BY	BB
DATE	8/9/07
SCALE	NTS

TIGG corporation

3000#
PLAN & ELEVATION

DWG. NO. C07-1113

REV. 0

3.1 Filling the vessel with carbon

In order to protect the liquid underdrain (collector) system, **uncontaminated water (liquid) must be added to the vessel prior to adding the carbon.**

A sufficient amount of water should be added so that the water level is at least 2 feet above the underdrain.

The water can be added via the process piping or through the top manway or (handhole on the inlet in PHD models. When filling, the vent, manway or handhole must be open and the inlet on drum units must be open.

Fresh carbon generally will arrive in (1000-1100 pound) super sacks or (55 pound) bags. Each vessel may be filled by emptying the carbon container through the manway on top of the vessel. Drum units usually have the carbon prefilled at TIGG's production facilities.

After all of the carbon is in the vessel, fill the vessel with uncontaminated liquid. This can be done through the process piping (inlet or outlet) or through the manway. Filling from the bottom up is the preferred method. In the event uncontaminated water is not available, fill with contaminated water from the top down at a slow rate so that a depression is not made in the top of the carbon bed. If the process lines are used, the vent or manway should be open.

3.2 Wetting and Deaerating

For peak adsorption performance, as much air as possible should be removed before the adsorber is put onstream.

A bed of carbon consists of the following:

Void volume	-	40%
Pore volume	-	40%
Carbon skeleton	-	20%

Since 80% of the carbon bed volume is air, with 40% being in the pores of the carbon, **special prewetting steps must be taken.** If proper prewetting is not done, channeling will occur and high-pressure drop and/or premature breakthrough of the contaminant(s) will occur.

A relatively long time is required for water to enter the pores and displace the air since the pores in dry carbon are filled with air and some adsorbed oxygen.

Approximately 90% of the pores in dry carbon are filled with water after 24 hours at ambient temperature (70 degrees F.) and any liquid having the same viscosity. With more viscous liquids the time to wet will be longer. After 16 hours check the liquid level. If it is below the top of the carbon, add more liquid until it is above the carbon.

3.2.1 Backwashable System

If there is inadequate prefiltration, and/or there are suspended solids present, backwashing will be required. In this case the carbon must be backwashed for 30-45 minutes prior to treating contaminated water.

This is necessary so that the particles will be segregated (classified) and thereby subsequent backwashing operations won't change the relative position of the particles and destroy the mass transfer zone.

This backwash operation will also remove the air and carbon fines from the bed. If this procedure is not followed the carbon usage rate will be higher, there could be very early breakthrough and the pressure drop will be higher than desired.

The following backwash rates should be used for the various vessels:

	GPM	
Unit	**CANSORB**	**ECONOSORB L**
C25PHD	50-60	-------
C50 PHD	100-115	-------
C35 & EL 500	80-110	80-100
C50 & EL 1000	115-140	115-125
C75 & EL 2000	180-210	90-100
C100 & EL 3000	250-300	200-220
C200	400-475	-------
C500	500-600	-------

If the initial time for prewetting is less than 2 days, backwash the adsorber two days after startup.

3.2.2 Non-backwashable System

Option 1 – When time is available

After the vessel has been filled with the water as described in Section 2.2 use the following procedures to remove air from the carbon and vessel:

1. Allow the adsorber to stand filled with the water for three or more days. The longer the better. If the time can only be two days or less see Option 2.
2. Remove the water from the vessel. This can be done by (1) draining (make sure the adsorber is vented), (2) using air pressure to pressure the liquid out the outlet nozzle, **don't exceed the adsorber design pressure** or (3) siphoning out the outlet (inlet or vent must be open to the atmosphere).

3. When all of the water is out of the adsorber, the adsorber must be refilled with uncontaminated water. During this filling operation the adsorber must be vented. The water addition should continue until water exits the vent on the inlet nozzle. This step removes the air that is in the adsorber and it is now ready to be placed into service.

Option 2 – When time is limited to less than two days

When time is not available to prewet the carbon for 2 days, do the following:

1. Add uncontaminated water to the adsorber as described in Section 2.1.
2. After the time that can be allowed to wet the carbon, follow the steps described in items 2 & 3 in Option 1.
3. At this point, there is still air in the carbon pores. Therefore, after days 2 and 3 repeat steps described in items 2 & 3 in Option 1.

In a process system where water cannot be tolerated follow the same filling and draining procedures. However, add the liquid into the top of the adsorber.

4.0 OPERATION

Operational flow rates, and thus contact time for a given volume of adsorbent, are a function of:

1. The liquid being treated
2. Temperature
3. Nature and concentration of the contaminants
4. Other system conditions
5. Removal (effluent) requirements

If conditions dictate a longer contact time than is possible in one unit, CANSORB units can be operated in parallel or series. Either one of these options will usually result in a lower adsorbent usage rate.

4.1 Post startup deaeration

After several days of operation it is advantageous, in many cases, to drain and refill the adsorber in order to get rid of air that may not have been removed in the pre-startup deaeration operation.

4.2 Backwashing

If there are suspended solids in the influent, these may be filtered by the carbon bed. If this occurs, they will usually collect on top of the bed and the pressure drop across the bed will increase. When the differential pressure drop across the bed is 8-10 psi greater than it was when the vessel was initially put onstream, the vessel should be backwashed. Use the flow rates listed in Section 3.2.1. For drum units the maximum pressure should not be exceeded.

This operation should remove the solids and the differential pressure should return to normal. If it doesn't repeat the backwash procedure at a higher rate. Have someone observe the backwash water effluent to make sure carbon isn't being removed and to know when the water is clear.

If the backwashing operation doesn't result in lowering the differential pressure, the top few inches of the adsorbent may be loosened by raking and/or removed and discarded per an environmentally acceptable procedure.

4.3 Maintaining a liquid level in the carbon bed

Since the pressure drop through a carbon bed is very low during operation at normal flow rates, it is possible to have the water level reach an equilibrium point low in the bed when the discharge is at a point lower than the top of the carbon bed. This is especially true for the Econosorb L units. Therefore, the discharge piping should be elevated so that there is a section above the top of the carbon bed or a backpressure control valve should be installed in the discharge line.

4.4 Prevention of siphoning

When the flow to the CANSORB vessel is stopped, there is the potential for siphoning to occur, unless provisions are made in the discharge piping to prevent it. This is especially the case when the liquid is being discharged at an elevation lower than the top of the carbon bed.

The siphoning can be prevented by installing (1) an anti-siphon device or a short vertical section of pipe, in a Tee in the effluent pipe open to the atmosphere above the top of the CANSORB unit or (2) discharging into a tank at a level higher than the top of the CANSORB unit.

4.5 Prevention of over pressuring

In addition to the filtering of suspended solids causing a pressure buildup across the carbon such things as bacteria growth, introduction of air into the bed via a pumping operation, and precipitation of metals, can cause the pressure across the carbon bed to increase.

If there is the possibility of any of these occurring and the design pressure of the vessel could be exceeded, a properly sized relief valve or rupture disc should be installed.

4.6 Effluent sampling / Changeout determination

The frequency for sampling will depend on whether the influent concentration of the contaminants is relatively constant or variable.

Sampling should be done on a routine basis until it can be determined what the carbon usage rate is. Then the sampling frequency can usually be reduced.

If there is only one CANSORB unit onstream the time to affect a carbon changeout will depend on the effluent criteria set by the discharge permit.

If there are two CANSORB units operating in series, it is normally possible to allow the concentration of the contaminants in the effluent from the lead vessel to equal that of the influent. This is an indication that the carbon is saturated and thus the carbon usage is the minimum

When this occurs the lead vessel is removed from the system, the spent carbon is removed and the vessel is filled with fresh carbon. This vessel is then put in the secondary (lag) position.

Since the change out, refilling and wetting of the carbon will take 2-3 days, the system will be sized so that during this time, breakthrough will not occur in the lag vessel.

4.7 Removing spent carbon

4.7.1 CANSORB units C35 – C500

Spent carbon can be removed either by vacuuming or in slurry form.

If vacuum is selected, a vac-truck or drum vacuum can be used. The CANSORB unit must be drained and the top manway removed. The carbon is subsequently removed via a non-metallic pipe or hose through the manway. **Extreme care must be exercised to avoid damaging the internals and/or lining.**

If the carbon is to be removed in the slurry form, it can be pressured, using air or water, out the bottom 2-inch outlet. The slurry line should be connected to a vented receiving container prior to carbon removal. The receiving container should have a drain for removing excess water from the carbon, prior to transportation.

The required pressure to move the slurry is generally less than 10 psig. This depends on the length of the slurry line and the elevation of the final point of discharge.

Note: After completing the slurry transfer, there is the possibility of a portion of spent carbon remaining in the bottom head. Therefore, open the manway to inspect the vessel. Depending on the quantity and location of the carbon, it may be necessary to use a hose to flush it into the bottom of the head and/or backwash to level carbon and then repressure the vessel.

When the vessel is empty it is ready to be refilled. The procedures outlined in Sections 3.0 should be followed.

4.7.2 Econosorb-L – 500,1000, 2000 & 3000

The spent carbon is removed from these units via vacuum only since there is no slurry outlet connection.

4.7.3 Open head CANSORB Drum units

In order to remove the spent carbon from the C5 and C15 drums, the bolt/ring closure is removed and the top is lifted or pivoted to one side.

Removing the top requires loosening the male adapter inside the top, immediately below the outlet bung.

For the C20 drum, a flex hose section of the outlet riser below the outlet bung is disconnected or used as a pivot.

The spent carbon is then dumped out and fresh carbon is put in.

The fresh carbon must be prewetted. After the carbon is wetted, the water can be removed by introducing air pressure through the inlet or siphoning through the outlet. **Do not exceed the drum operating pressure!**

5.0 MAINTENANCE

5.1 Regular maintenance

The CANSORB units are designed to require minimal maintenance. The following items should be inspected with regard to the carbon vessels, piping and gages:

1. Internal inspection of the vessel should be performed each time carbon is removed. This would include the lining and the collectors (underdrain).

2. Pressure gages should be checked periodically to insure proper operation

3. Piping and valving should be periodically inspected for signs of wear and/or leakage.

5.2 Short-term shutdown

The adsorption system is designed to operate continuously. A short-term shutdown is expected to last less than 72 hours. It is most likely to occur during a weekend shutdown or routine maintenance of the system. During a short-term shutdown, the adsorber may remain filled with water unless work is being performed on the adsorber itself. It may be necessary to close the inlet and outlet valves to prevent siphoning or drainage from the system.

5.3 Long-term shutdown

A long-term shutdown is most likely to occur during spent carbon change-out, changes in the system configuration, major maintenance, etc. During a long-term shutdown the adsorber should be completely drained to minimize the potential for biological growth and bed septicity.

6.0 SAFETY CONSIDERATIONS

The normal safety procedures that are practiced at the site should be followed.

Read the MSDS sheet for the carbon (media).

Understand the potential hazards of the stream being treated by the system. The media may contain higher concentrations of the contaminants being adsorbed than is in the influent stream. Also the media might be considered hazardous material and may require specific handling precautions.

In order to protect the vessel, a relief device such as a rupture disc or safety valve should be installed.

WARNING: Wet drained activated carbon preferentially removes oxygen from air. In closed or partially closed containers, the oxygen concentration can reach dangerously low levels. Therefore, OSHA procedures related to entering confined low-oxygen spaces should be followed by workers who must enter a vessel containing wet carbon.

7.0 TROUBLESHOOTING

There are a varied number of things that can cause poor performance of an activated carbon system. These are discussed below.

7.1 High pressure drop

Following are possible causes for having a high-pressure drop through the carbon. They are:

1.**Air in the bed. This is the most frequent cause of high-pressure drop.** This is mainly caused when the carbon is not properly prewetted. The other causes are incoming air due to a vortex in the tank feeding the pump and release of dissolved gases within the carbon bed.

Solution: Check for air by slowly closing a valve in the discharge line. Watch the pressure gage in the inlet line. If the pressure increases slowly there is air in the vessel. Drain/remove the liquid and refill the vessel while venting the air out the vent or inlet at the problem occurs and the proper wetting procedure has been followed, check for a vortex in the feed tank and/or determine if there is the possibility for degassing.

2. **Excessive fines in the carbon.** This is not a frequent cause for a high-pressure drop.

Solution: Backwash the carbon, if possible, at a rate of 8-10 gpm/ft^2 until the water exiting the vessel is clear. If the vessel cannot be backwashed and the pressure is too high to maintain the desired flow it may be necessary to remove the carbon, partially fill the vessel with water and slowly reinstall the carbon so that the fines can float on the top of the water. Then overflow the water to remove the fines.

3. **Solids in the influent**
Suspended solids or sediment in the influent will be filtered out by the carbon.

Solution: Open the manway or remove the top lid in the case of drums and inspect the top of the carbon bed. If the vessel can be backwashed this should solve the problem unless the solids have created a mud like cake on top of the bed. In this case manually remove the cake. If the layer to be removed is more than several inches, it may be necessary to replace with equivalent fresh carbon or if it is expected that the carbon is near exhaustion then replace the entire bed of carbon.

If it is anticipated that the solids will always be in the feed, a filter should be installed in the influent line.

7.2 Carbon loss

In most carbon systems that treat water and wastewater, carbon losses are not usually excessive. They usually result from excessive backwash rates, broken underdrains or physical degradation of the carbon by strong oxidants such as chlorine.

Solution: Lower the backwash rate. It may be too high due to the viscosity being higher than the design value. A seasonal decrease in water temperature is usually the cause for losing carbon during backwash.

Check the effluent liquid for the presence of carbon. If granules are present then the underdrain is damaged or the piping of the inlet and outlet is reversed. Remove the carbon and repair the underdrain or repipe the inlet and outlet.

Chlorine reacts with the carbon skeleton. With prolonged contact the effluent will turn brown. The carbon must be replaced when this occurs.

7.3 Premature breakthrough of organics

This will occur for the following reasons:

1. Channeling in the carbon due to presence of air in the bed.
2. Insufficient contact time in the carbon bed.
3. A change in the influent concentrations of the contaminants.
4. Incomplete removal of spent carbon prior to refilling.

Solution: Check for air by slowly closing a valve in the discharge line. Watch the pressure gage in the inlet line. If the pressure increases slowly there is air in the vessel. Drain/remove the liquid and refill the vessel while venting the air out the vent or inlet.

Add more carbon, if possible. Otherwise reduce the flow rate or consider adding another vessel.

Remove carbon completely and refill vessel.

7.4 Effluent concentration of an organic higher than influent concentration

This is due to a phenomenon termed rollover. This occurs when components that are more strongly adsorbed displace compounds that are less strongly adsorbed.

Solution: If the contaminant is not one of the regulated organics continue to operate the system. If the eluting organic is part of the discharge permit and it is exceeding the permitted level then the carbon needs to be replaced. In order to better utilize carbon it may be desirable to add another vessel downstream so that the lead adsorber can become saturated prior to having to be removed.

For reorders, replacement adsorbents or further technical information please contact TIGG Corporation, 1-800-925-0011

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

ROSEDALE PRODUCTS, INC.

MODEL NCO-8

150 PSIG RATED FILTER UNIT

Table of Contents

I. Installation

Please remove all shipping and crating materials carefully. Be sure to remove the plugs from the inlet and outlet openings. Dispose of all crating materials safely.

The Model NCO-8 Filter unit is capable of having several different piping variations based upon the outlet style of your unit. The inlet service line should be connected to the inlet flange or NPT coupling located near the top of the unit (above the basket level).

The outlet service line should be connected to the outlet flange or coupling, located near the middle or bottom of the unit depending upon the style of your unit (below basket level).

There are two 1/4" NPT ports on the shell and one 1/4" NPT port on the cover of the Model NCO-8 Filter unit. These ports can remain plugged or used for pressure gauges or special fittings as your application requires.

Some installations require electrical grounding of all equipment, be sure to provide adequate grounding where necessary.

After completing installation be sure to double check connections for integrity. Your Model NCO-8 Filter unit has been factory pressure tested leak free, therefore, any seepage problems usually occur from improper installation connections.

You are now ready to install the filter basket and bag. Remove cover by loosening the cover eyenuts. The eyenuts in the slotted corners should be loosened sufficiently to swing free. Loosen the third eyenut sufficiently to allow the top cover and closure assembly to swing away from the top of the unit.

If your application requires a basket seal, insert the basket seal into the basket collar groove. Refer to Figure 1 or Figure 2 in the Spare Parts Diagram for installation position of your seal.

Place the basket into the filter housing, make sure the basket flange is firmly seated into the adapter.

Insert bag into the bag basket making sure filter bag ring is firmly seated on top of the basket flange. For best results, be sure filter bag is installed fully extended to the bottom of the basket.

Before replacing cover assembly, inspect cover seal gasket (replacing as necessary). Close cover and alternately tighten the three clamp assemblies evenly to ensure a leak proof seal between the cover and housing body. Torque closure assemblies to a maximum of 60-90$^{\text{foot-lbs}}$. Each installation may have different closure bolting torque requirements to effectively seal the filter vessel cover. Many installations require significantly lower closure bolting torque due to the variables explained below. The suggested torque values are for reference only. They are to be used as a guideline by maintenance personnel. These values are meant as a guideline for safe operation of the filter system at its maximum rated pressure. Many variables affect the torque required to operate the filter vessel without leaks. These variables include the diameter of the bolt, type and number of threads, material type and grade, condition of the nut bearing surface and lubrication of bolt threads and nut bearing surfaces. Other factors such as the condition of the o-ring, o-ring material, viscosity of the fluid being filtered, operating pressures, temperature, and the closure assembly tightening procedure must also be considered.

Your Rosedale Model NCO-8 is now ready for operation.

II. Operation

Filter System Start-Up Procedure:

Prior to turning on the flow to the inlet service, please make the following checks:

1. Check inside filter unit to be sure basket and filter bag (if applicable) are in housing and do not require cleaning or replacement. If necessary install a clean filter basket and bag (if applicable).

2. Check that filter unit cover is securely fastened to housing. You are now ready to open the flow to the inlet service line. Slowly open the inlet service line approximately 25% of normal operational flow (open slowly as not to displace filter bag inside the housing). After filter unit is pressurized and vented, slowly open outlet service line unit valve until completely open. Complete opening of inlet service line until desired flow rate is reached.

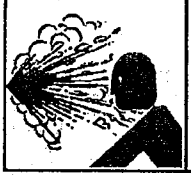
Once the desired service flow has been established, the filter will operate efficiently until dirty. However, under no circumstances should more than *15 PSI Differential Pressure* through the filter be obtained. Operating the filter unit with a high differential may cause filter bags to rupture and/or cause damage to filter system and downstream equipment.

To prevent excessive drop through the filter unit, regular inspection of the filter media is required. Monitoring of differential pressure through the housing can be utilized as a means of determining whether or not the filter media needs cleaning or replacement.

When it becomes necessary to clean or replace filter media, follow the procedure outlined below:

1. First close the flow from the inlet service line.
2. Close the flow to the outlet service line. (In some applications closing flow to outlet is not required.)
3. Relieve the pressure from the filter unit.

⚠ WARNING



CONTENTS UNDER PRESSURE
Relieve Pressure in accordance with Manufacturer's instructions before opening Filter Vessel.
FAILURE TO DO SO MAY RESULT IN SERIOUS BODILY INJURY.

4. Drain housing sufficiently to access filter basket.
5. Remove cover by loosening the cover eyenuts. The eyenuts in the slotted corners should be loosened sufficiently to swing free. Loosen the third eyenut sufficiently to allow the top cover and closure assembly to swing away from the top of the unit.
6. Remove filter basket and clean thoroughly, remove the filter bag (if applicable) and throw away. (Cleaning and reusing the filter bag is not recommended.)
7. Remove debris and sludge from inside the inlet portion of housing to avoid interference with cover seal or flow of fluid being filtered.
8. Remove basket seal and inspect, replace if necessary. Clean basket seal groove and replace

basket seal (see spare parts diagram for location of basket seal).

9. Install clean filter basket and filter bag (if applicable). Place the basket into the filter housing, make sure the basket flange is firmly seated into the adaptor. If applicable, insert bag on top of the bag basket flange making sure filter bag ring is firmly seated inside the adaptor. For best results, be sure filter bag is installed fully extended to the bottom of the basket
10. Inspect cover gasket for cuts or other signs of failure and make sure it is properly seated.
11. Move cover back into position, and alternately tighten the three clamp assemblies evenly to ensure a leak proof seal between cover and housing body. Torque closure assemblies to a maximum of 60-90$^{foot\text{-}lbs}$. Many installations require significantly lower closure bolting torque due to the variables previously explained in Section I.

Your Rosedale Model NCO-8 Filter unit is now ready for operation. Refer to filter system start-up procedure.

III. Spare Parts List

Your Rosedale Model NCO-8 Filter unit will give you many years of reliable service provided periodic inspections are made of various components and replacement of worn parts are made promptly. The following is meant to be a recommended spare parts list, these parts are illustrated on the following page.

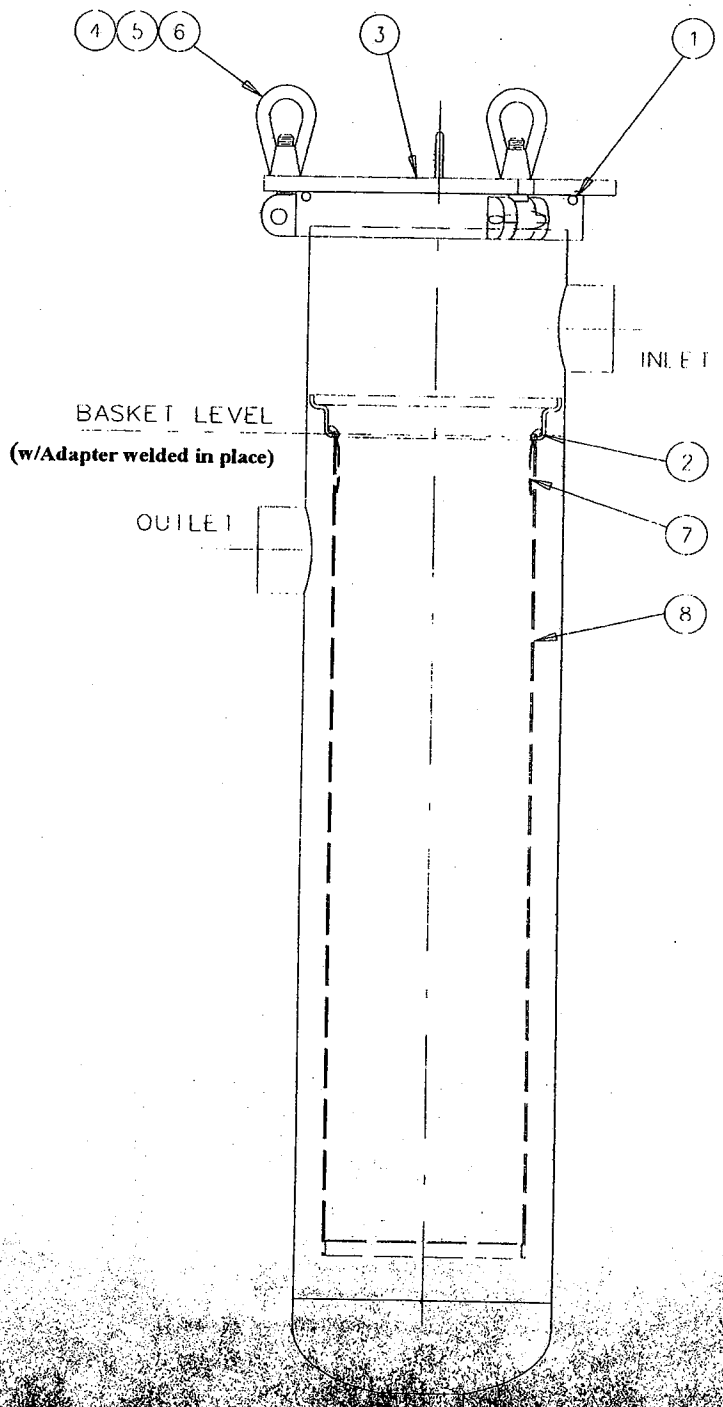
SPARE PARTS LIST			
Balloon	Description	Part Number	Time-Frame
1	Cover Seal	8150CG-*	as needed
2	Basket Seal	9BG-*	as needed
3	Cover	RCO8	as needed
4	Eye Nut	4ENNI	as needed
5	Rod End	4RENI	as needed
6	Clevis Pin Assembly	4CPNI	as needed
7	Filter Bag	(See Order)	as needed
8	Filter Basket	(See Order)	as needed
9	Tripod Legs	8T22*S	as needed

* Select Material Designation:

C=Carbon Steel
S=304 Stainless Steel
S316=316 Stainless Steel

B=Buna N
E=Ethylene Propylene
V=Viton
TEV=Teflon Encapsulated Viton
TSW=Teflon Solid White

IV. Spare Parts Diagram



Important Notice

Warranty: In the event any Rosedale Products, Inc. filtration product is found to be defective in material, workmanship, or not in conformance with any express warranty for a specific purpose, Rosedale's only obligation and your exclusive remedy, shall be to repair, replace or refund the purchase price of such parts or products upon timely notification thereof and substantiation that the product has been stored, maintained and used in accordance with Rosedale's written instructions.

EXCLUSIONS TO WARRANTY: THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, EXCEPT OF TITLE AND AGAINST PATENT INFRINGEMENT.

LIMITATION OF LIABILITY: Except as provided above, Rosedale shall not be liable or responsible for any loss or damage, whether direct, indirect, incidental, special or consequential, arising out of sale, use or misuse of Rosedale filtration products, or the user's inability to use such products.

THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.

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89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

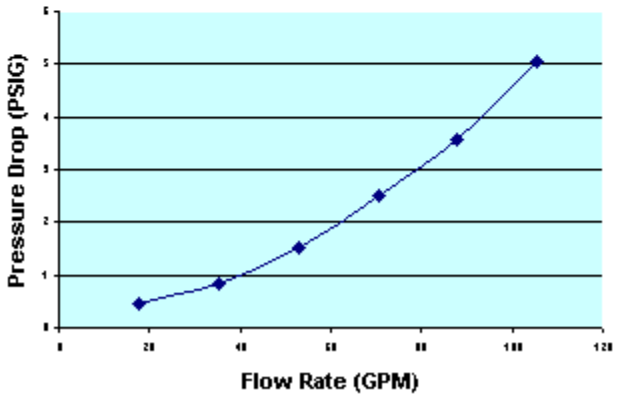
HPAF SERIES FILTERS
MODEL HPAF-2000

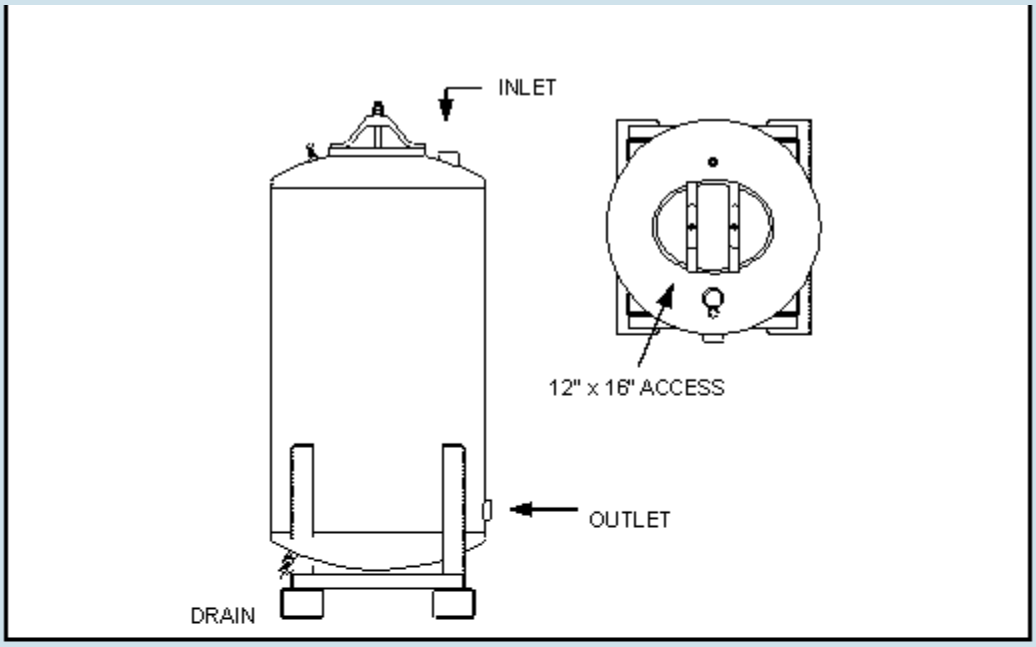
The HPAF-2000 filter is a media filter vessel designed to treat liquid streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. Some applications include:

- Dissolved Organic Removal (Activated Carbon)
- Suspended Solids Removal (Sand Filter)
- Dissolved Minerals (Softener Resin)
- Oil and Grease Removal (Organo-Clays)
- Dissolved and Precipitated Metals Removal
- Special Organics (Resin/Carbon Blend)
- Catalytic Reactor (Chlorine and Peroxide Removal)
- Bio-Remediation Contactor Unit

PRESSURE DROP GRAPH

*(As Filled - 8*30 GAC)*





HPAF-2000 SPECIFICATIONS			
Overall Height	8'6"	Vessel/Internal Piping Materials	CS (SA-36) / SCH 40 PVC
Diameter	48"	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	3"	External Coating	Epoxy Mastic
Drain / Vent (FNPT)	3/4" / 1/2"	Maximum Pressure / Temp	75 PSIG / 140° F
GAC Fill (lbs)	2,000	Cross Sectional Bed Area	12.5 FT^2
Shipping / Operational Weight (lbs)	3,020/6,775	Bed Depth/Volume	5.5 FT / 68.7 FT^3

89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

FILTRATION MEDIA :
8x30 RE-ACTIVATED CARBON
4x10 RE-ACTIVATED CARBON

GENERAL DESCRIPTION

Select Re-Activated carbon from domestic sources is quality screened during our purchasing process for activity, density and fines. The use of re-activated carbon is recommended as a lower cost alternative for most sites where drinking water quality is not necessary. In many cases our re-activated carbon meets and exceeds imported virgin carbon. In addition all carbon either sold by itself or installed in our filtration units traced by lot number to the installation or sale.

8x30 (Liquid Phase) Standard Specifications:	Standard	Value
Iodine Number	ASTM D-4607	800 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	8x30 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75

4*10 (Vapor Phase) Standard Specifications:	Standard	Value
Carbon Tetrachloride Activity Level	ASTM D-3467	40 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	4x10 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75

Charcoal, Activated Carbon

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Charcoal, Activated Carbon**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25246**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Irritant
Eye irritation, category 2A
Specific target organ toxicity following single exposure, category 3

Flammable
Flammable solids, category 1

Eye Irrit. 2
STOT SE 3
Hazards Not Otherwise Classified - Combustible Dust
Flam. Sol. 2

Signal word :Danger

Hazard statements:
Flammable solid
Causes serious eye irritation
May cause respiratory irritation
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/light/equipment
Avoid breathing dust/fume/gas/mist/vapours/spray
Wash skin thoroughly after handling
Use only outdoors or in a well-ventilated area

Wear protective gloves/protective clothing/eye protection/face protection
Do not eat, drink or smoke when using this product
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
In case of fire: Use agents recommended in section 5 for extinction
If eye irritation persists get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
Store locked up
Store in a well ventilated place. Keep container tightly closed
Dispose of contents and container to an approved waste disposal plant

Combustible Dust Hazard: :
May form combustible dust concentrations in air (during processing).

Other Non-GHS Classification:

WHMIS

D2B 

B6 

NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7440-44-0	Carbon	100 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position.Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Get medical assistance if cough or other symptoms appear.

After skin contact: Rinse/flush exposed skin gently using soap and water for 15-20 minutes.Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if

concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists.

Most important symptoms and effects, both acute and delayed:

Irritation, Nausea,Headache, Shortness of breath.;

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician.Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition. Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents: None identified.

Special hazards arising from the substance or mixture:

Combustion products may include carbon oxides or other toxic vapors.Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

Protective equipment: Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Move product containers away from fire or keep cool with water spray as a protective measure, where feasible.Use spark-proof tools and explosion-proof equipment.Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols.Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Use spark-proof tools and explosion-proof equipment.Ensure that air-handling systems are operational.Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13. Should not be released into environment.

Methods and material for containment and cleaning up:

Keep in suitable closed containers for disposal.Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect solids in powder form using vacuum with (HEPA filter). Evacuate personnel to safe areas.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Minimize dust generation and accumulation. Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with eyes, skin, and clothing.

Conditions for safe storage, including any incompatibilities:

Store away from incompatible materials.Protect from freezing and physical damage.Keep away from food and beverages.Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame.

Store in cool, dry conditions in well sealed containers. Store with like hazards

SECTION 8 : Exposure controls/personal protection



Control Parameters: , , OSHA PEL TWA (Total Dust) 15 mg/m3 (50 mppcf*)
, , ACGIH TLV TWA (inhalable particles) 10 mg/m3

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling.Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Respiratory protection: When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation.Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Wear protective clothing.

Eye protection: Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping.Wash hands before breaks and at the end of work.Avoid contact with skin, eyes, and clothing.Before wearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Black solid	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Odorless	**Vapor pressure**:	1 mm Hg @ 3586C
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	6.0 – 9.0	**Relative density**:	1.8 - 2.1
Melting/Freezing point:	3652 - 3697°C / 6606 - 6687°F	**Solubilities**:	Insoluble in water.
Boiling point/Boiling range:	Decomposes	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	1 mm Hg @ 3586C

Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined			

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing
Conditions to avoid: Incompatible Materials.Ignition sources, dust generation, moisture, excess heat.
Incompatible materials: May react vigorously or violently when mixed with strong oxidizing agents such as chlorates, bromates and nitrates, especially when heated. Incompatible with chlorinated paraffins, Lead oxide, manganese oxide, iron oxide, liquid oxygen, oils, and moisture.
Hazardous decomposition products: Oxides of carbon.

SECTION 11 : Toxicological information

Acute Toxicity:		
Oral:	Effect level > 8000 mg/kg bw	LD50 rat
Inhalation:	Effect level > 4.6 mg/m³ air Exp. duration 4 h	rat
Chronic Toxicity: No additional information.		
Corrosion Irritation: No additional information.		
Sensitization:		No additional information.
Single Target Organ (STOT):		No additional information.
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.
Reproductive Toxicity:		No additional information.

SECTION 12 : Ecological information

Ecotoxicity

Brachydanio rerio (new name: Danio rerio) Duration 96 h Endpoint LC0 : Effect conc. 1000 mg/L

Daphnia magna 24 h Endpoint EC100: Effect conc. 10000 mg/L

Persistence and degradability:
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material.Dispose of empty containers as unused product.Product or containers must not be disposed with household garbage.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11).Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

1362

UN proper shipping name

Carbon Activated

Transport hazard class(es)

Class:
4.2 Substances liable to spontaneous combustion

Packing group:III
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Fire

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

None of the ingredients is listed

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 03.02.2015
Last updated : 03.19.2015

CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

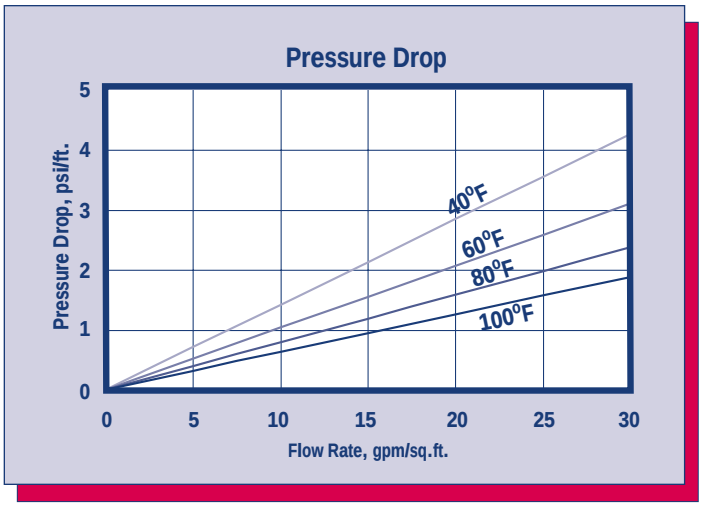
RESINTECH CGS is a high purity, light colored, high capacity, gel type sulfonated polystyrene cation resin supplied in the sodium form as moist, tough uniform spherical beads. *ResinTech CGS* specifically is intended for use in all water softening applications,including beverages, potable water and water used for food processing. It's high capacity and high DVB content provide long life and good chlorine resistance in all potable water applications. (It is also available as a dark colored product *RESINTECH CGS-BL* with identical properties.)

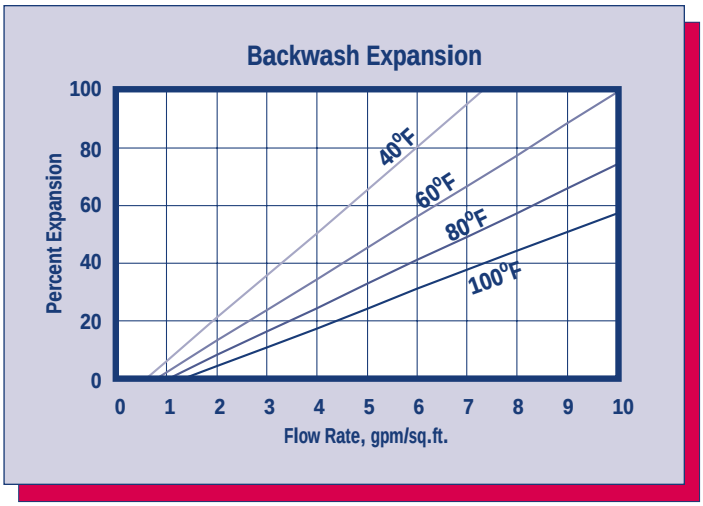
FEATURES & BENEFITS

- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the F.D.A.*
- **EXCELLENT REGENERATION EFFICIENCY**
  Virtually the same operating capacity as premium grade *ResinTech CG8-BL*
- **NSF/ANSI-61 VALIDATED**
- **UNIFORM PARTICLE SIZE**
  16 to plus 50 mesh range; gives a LOWER PRESSURE DROP while maintaining SUPERIOR KINETICS.
- **SUPERIOR PHYSICAL STABILITY**
  90% plus sphericity and high crush strengths together with a very uniform particle size provide greater resistance to bead breakage while maintaining low pressure drops.
- **LOW COLOR THROW**

*For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to insure compliance with extractable levels.

HYDRAULIC PROPERTIES





PRESSURE DROP - The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate, at various temperatures.

BACKWASH - After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. This will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of *RESINTECH CGS* in the sodium form.

1 Resintech Plaza • 160 Cooper Road • West Berlin,NJ 08091 • Phone:(856)768-9600 • Fax:(856)768-9601 • E-mail:ixresin@resintech.com • Web Site:www.resintech.com

RESINTECH® CGS

PHYSICAL PROPERTIES

Polymer Structure	Styrene Crosslinked with DVB
Functional Group	R-$(SO_3)^-M^+$
Ionic Form, as shipped	Sodium
Physical Form	Tough, Spherical Beads
Screen Size Distribution	16 to 50
+16 mesh (U.S. Std)	< 5 percent
-50 mesh (U.S. Std)	< 1 percent
pH Range	0 to 14
Sphericity	90+ percent
Uniformity Coefficient	Approx. 1.6
Water Retention	
Sodium Form	48 to 54 percent
Solubility	Insoluble
Shipping Weight	
Sodium Form	48 lbs./cu.ft.
Total Capacity	
Sodium Form	1.8 meq/ml min

SUGGESTED OPERATING CONDITIONS

Maximum Temperature	
Sodium Form	250^0 F
Minimum Bed Depth	24 inches
Backwash Rate	50 to 75% Bed Expansion
Regenerant (NaCl or KCl)	
Concentration	10 to 15 percent
Flow Rate	0.5 to 1.5 gpm/cu.ft.
Contact Time	> 20 minutes
Level	4 to 15 pounds/cu.ft.
Displacement Rate	Same as Regen Flow Rate
Volume	10 to 15 gallons/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Volume	35 to 60 gallons/cu.ft.
Service Flow Rate	2 to 10 gpm/cu.ft.

OPERATING CAPACITY

Sodium Chloride (NaCl) Regeneration

The sodium cycle operating capacity of *RESINTECH CGS* for hardness removal at various regeneration levels with an influent calcium/magnesium ratio of 2/1 and a hardness level of 500 ppm, as $CaCO_3$, is shown in the following table:

Pounds NaOH/cu.ft.	Capacity Kilograins/cu.ft.
5	20.0
7.5	25.4
10	29.0
15	33.0

Potassium Chloride (KCl) Regeneration

The potassium cycle operating capacity of *RESINTECH CGS* for hardness removal at various regeneration levels with an influent calcium/magnesium ratio of 2/1 and a hardness level of 500 ppm, as $CaCO_3$, is shown in the following table:

Pounds NaOH/cu.ft.	Capacity Kilograins/cu.ft.
5	16.6
7.5	21.8
10	26.6
15	31.2

APPLICATIONS

Softening

RESINTECH CGS is ideally suited for industrial, commercial, or residential softening applications where free chlorine is not present because of its high capacity, uniform particle size and good physical stability.

CGSver010603

SBG1

ANION EXCHANGE RESIN TYPE ONE GEL Cl OR OH FORM

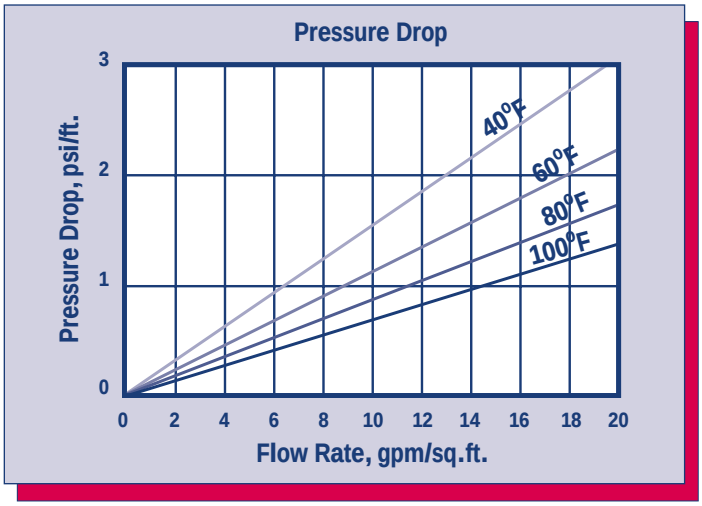
RESINTECH SBG1 is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *RESINTECH SBG1* is intended for use in all types of deionization systems and chemical processing applications. It is similar to *RESINTECH SBG1P* but has a higher volumetric capacity and exhibits lower TOC leach rates. This makes it the better performer in single use applications such as in cartridge deionization and when high levels of regeneration are used such as in polishing mixed beds. On the other hand, *RESINTECH SBG1P* is more resistant to organic fouling and gives higher operating capacities at low regeneration levels such as those used in make up demineralizers.

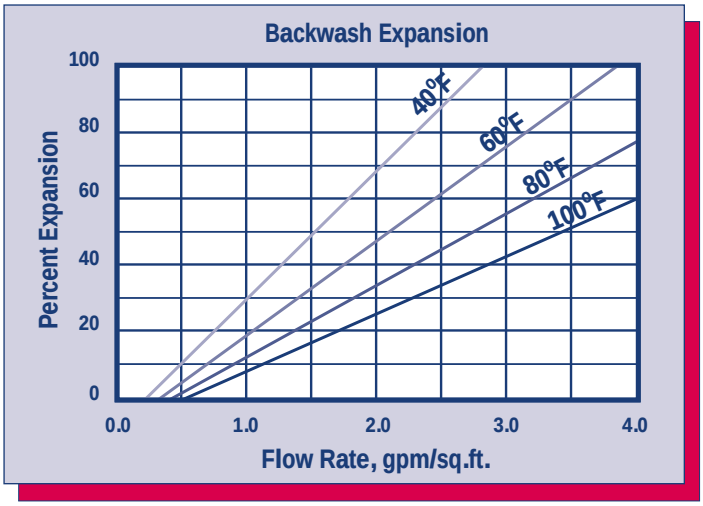
FEATURES & BENEFITS

- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS.**
  Conforms to paragraph 21CFR173.125 of the Food Additives Regulations of the F.D.A.*
- **HIGH TOTAL CAPACITY**
  Provides longer run lengths in single use applications or where high levels of regeneration are used such as in mixed bed polishers, cartridge demineralizers.
- **UNIFORM PARTICLE SIZE**
  16 to plus 50 mesh range; gives a LOWER PRESSURE DROP while maintaining SUPERIOR KINETICS.
- **SUPERIOR PHYSICAL STABILITY**
- **LOWER TOC LEACH RATE**
  Makes it ideal for polishing mixed beds in wafer washing and other high purity water polishing applications.

*For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to ensure compliance with extractable levels.

HYDRAULIC PROPERTIES





PRESSURE DROP

The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate, at various temperatures.

BACKWASH

After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. This will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of *RESINTECH SBG1* in the sodium form.

RESINTECH® SBG1

PHYSICAL PROPERTIES

Polymer Structure	Styrene Crosslinked with DVB
Functional Group	R-N-$(CH_3)_3^+Cl^-$
Ionic Form, as shipped	Chloride or Hydroxide
Physical Form	Tough, Spherical Beads
Screen Size Distribution	16 to 50
+16 mesh (U.S. Std)	< 5 percent
-50 mesh (U.S. Std)	< 1 percent
pH Range	0 to14
Sphericity	> 93 percent
Uniformity Coefficient	Approx. 1.6
Water Retention	
Chloride Form	43 to 50 percent
Hydroxide Form	Approx. 53 to 60 percent
Solubility	Insoluble
Approximate Shipping Weight	
Cl Form	44 lbs/cu.ft.
OH Form	41 lbs/cu.ft.
Swelling Cl- to OH-	18 to 25 percent
Total Capacity	
Cl Form	1.45 meq/ml min
OH Form	1.15 meq/ml min

SUGGESTED OPERATING CONDITIONS

Maximum Continuous Temperature	
Hydroxide Form	140°F
alt Form	170°F
Minimum Bed Depth	24 inches
Backwash Rate	50 to 75 percent Bed Expansion
Regenerant Concentration*	2 to 6 percent
Regenerant Flow Rate	0.25 to 1.0 gpm/cu.ft.
Regenerant Contact Time	At least 40 Minutes
Regenerant Level	4 to 10 pounds/cu.ft.
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	10 to 15 gals/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	35 to 60 gals/cu.ft.
Service Flow Rates	
Polishing Mixed Beds	3 to 15 gpm/cu.ft.
Non-Polishing Apps.	2 to 4 gpm/cu.ft.

OPERATING CAPACITY

The operating capacity of *RESINTECH SBG1* for a variety of acids at various regeneration levels when treating an influent with a concentration 500 ppm, expressed as $CaCO_3$ is shown in the following table:

Pounds $NaOH/ft^3$	Capacity Kilograms per cubic foot			
	HCl	H_2SO_4	H_2SiO_3	H_2CO_3
4	11.3	14.0	14.7	18.6
6	12.8	16.3	17.3	19.8
8	14.3	13.3	19.5	21.6
10	15.5	20.0	22.2	22.2

APPLICATIONS

DEMINERALIZATION – *RESINTECH SBG1* is highly recommended for use in mixed bed demineralizers, wherever complete ion removal; superior physical and osmotic stability and low TOC leachables are required such as in wafer fabrication and other ultrapure applications.

RESINTECH SBG1 has high total capacity and low swelling on regeneration and provides maximum operating capacity in cartridge deionization applications. It is ideal for single use applications such as precious metal recovery, radwaste disposal and purification of toxic waste streams.

Highly crosslinked Type 1, styrenic anion exchangers have greater thermal and oxidation resistance than other types of strong base resins. They can be operated and regenerated at higher temperatures. The combination of lower porosity, high total capacity and Type 1 functionality make *RESINTECH SBG1* the resin of choice when water temperatures exceed 85°F and where the combination of carbon dioxide, borate and silica exceed 40% of the total anions.

RESINTECH SBG1P and *RESINTECH SBG1* are quite similar; the difference between them is the degree of porosity. *RESINTECH SBG1P* has greater porosity that gives it faster kinetics, and greater ability to reversibly sorb slow moving ions such as Naturally occurring Organic Matter (NOM). At lower regeneration levels and where chlorides make up a substantial portion of the anion load, or where the removal and elution of naturally occurring organics is of concern *RESINTECH SBG1P*, SBACR or SBG2 should be considered. At the higher regeneration levels used in mixed bed polishers *RESINTECH SBG1* provides higher capacity, and the lowest possible TOC leach rates.

Safety Data Sheet

Product Names: SBG1, SBG1-HP, SBG1-UPS, SBG1-C, SBG1-F, SBMP1, SBMP1-UPS, GP-SBA, SBG1P, SBG1P-UPS

(Type I Strong Base Anion Exchange Resin Chloride Form)

Effective date 31 March 2015

Section 1: Identification

1a	Product Names	ResinTech SBG1, SBG1-HP, SBG1-UPS, SBG1-C, SBG1-F, SBMP1, SBMP1-UPS, GP-SBA, SBG1P, SBG1P-UPS
1b	Common Name	Type I Strong base anion resin in the chloride form.
1c	Intended use	All general purpose anion exchanges for general use including salt form and demineralization.
1d	Manufacturer Address	ResinTech, Inc. 160 Cooper Road, West Berlin, NJ 08091 USA
	Phone Email	856-768-9600 ixresin@resintech.com

Section 2: Hazard Identification

2a Hazard classification

Not hazardous or dangerous

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

2b Product description

White, yellow, or orange colored solid beads approximately 0.6 mm diameter with little or no odor.

2c Precautions for use

Safety glasses and gloves recommended.
Slipping hazard if spilled.

2c Potential health effects

Will cause eye irritation.
Will cause skin skin irritation.
Ingestion is not likely to pose a health risk.

2d Environmental effects

This product may alter the pH of any water that contacts it.

Section 2A: Hazard classification UN OSHA globally harmonized system

WARNING

(contains ion exchange resin)

H320: Causes eye irritation

Precautionary Statements

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P333+313: If skin irritation or a rash occurs: Get medical advice/attention.

P337+313: If eye irritation persists get medical advice/attention.

P403+233: Store in a well-ventilated place. Keep container tightly closed.

P411: Store at temperatures not exceeding 50 °C/ 122 °F.

Please refer to the safety data sheet for additional information regarding this product

ResinTech, Inc.
160 Cooper Road
West Berlin, NJ 08091-9234
856 768-9600
Ixresin@resintech.com

Section 3: Composition/ Information on Ingredients

3a	Chemical name	Trimethylamine functionalized chloromethylated copolymer of polystyrene in the chloride form.
3b	Ingredients	
	Trimethylamine functionalized Chloromethlyated copolymer of Styrene and divinylbenzene in the Chloride form	CAS# 60177-39-1 (35 - 65%)
	Water	CAS# 7732-18-5 (35 – 65%)

Section 4: First Aid Measures

4a	Inhalation	No adverse effects expected- normal use of product does not produce odors or vapors.
4b	Skin	Wash with soap and water- seek medical attention if a rash develops.
4c	Eye contact	Wash immediately with water-seek attention if discomfort continues.
4d	Ingestion	No adverse effects expected for small amounts, larger amounts can cause stomach irritation. Seek medical attention if discomfort occurs.

Section 5: Fire Fighting Measures

5a	Flammability	NFPA Fire rating = 1
5b	Extinguishing media	Water, CO2, foam, dry powder.
5c	Fire fighting Procedures	Follow general fire fighting procedures indicated in the work place. Seek medical attention if discomfort continues.
5d	Protective Equipment	MSHA/NIOSH approved self-contained breathing gear, full protective clothing.
5e	Combustion Products	Carbon oxides and other toxic gasses and vapors.
5f	Unusual Hazards	Product is not combustible until moisture is removed. Resin begins to burn at approximately 230º C. Auto ignition can occur above 500º C.

Section 6: Accidental Release Measures

6a	Personal Precautions	Keep people away, spilled resin can be a slipping hazard, wear gloves and safety glasses to minimize skin or eye contact.
6b	Incompatible Chemicals	Strong oxidants can create risk of combustion products similar to burning, exposure to strong bases can cause a rapid temperature increase.
6c	Environmental Precautions	Keep out of public sewers and waterways.
6d	Containment Materials	Use plastic or paper containers, unlined metal containers not recommended.
6e	Methods of Clean-up	Sweep up material and transfer to containers.

Section 7: Handling and Storage

7a	Handling	Avoid prolonged skin contact. Keep resin moist and avoid allowing resin to completely dry.
7b	Storage	Store in a cool dry place (0º to 45º C) in the original shipping container. This product is thermally sensitive and will have reduced shelf life if subjected to extended periods of time at temperatures exceeding 50º C. Although freezing does not usually damage ion exchange resins, avoid repeated freeze thaw cycles.
7c	TSCA considerations	Ion exchange resins should be listed on the TSCA Inventory in compliance with State and Federal Regulations.

Section 8: Exposure Controls/Personal Protection

8a	OSHA exposure limits	None noted.
8b	Engineering Controls	Provide adequate ventilation.
8c	Personal Protection Measures	
	Eye Protection	Safety glasses or goggles.
	Respiratory Protection	Not required for normal use.
	Protective Gloves	Not required for limited exposure but recommended for extended contact.

Section 9: Physical and Chemical Properties

Appearance	Amber, yellow, or red beads approx. 0.6 mm diameter.
Flammability or explosive limits	Flammable above 500º C
Odor	Little or no odor
Physical State	Solid
Vapor pressure	Not available
Odor threshold	Not available
Vapor density	Not available
pH	Near neutral (6 to 8 typical)
Relative density	Approx 710 grams/Liter
Melting point/freezing point	Does not melt, freezes at approx. 0 C
Solubility	Insoluble in water and most solvents
Boiling point	Does not boil
Flash point	Approx 500º C
Evaporation rate	Does not evaporate
Partition Coefficient (n-octonol/water)	Not applicable
Auto-ignition temperature	Approx 500º C
Decomposition temperature	Above 230º C
Viscosity	Not applicable

Section 10: Stability and Reactivity

10a Stability	Stable under normal conditions.
10b Conditions to Avoid	Heat, exposure to strong oxidants.
10c Hazardous by-products	Trimethylamine, charred polystyrene, aromatic acids and hydrocarbons, organic amines, nitrogen oxides, carbon oxides, chlorinated hydrocarbons.
10d Incompatible materials	Strong oxidizing agents, e.g. nitric acid (such as HNO_3)
10e Hazardous Polymerization	Does not occur

Section 11: Toxicological Information

11a Likely Routes of Exposure	Oral, skin or eye contact.
11b Effects of exposure	
Delayed	None known.
Immediate (acute)	None known.
Chronic	None known.
11c Toxicity Measures	
Skin Adsorption	Unlikely, some transfer of acidity is possible.
Ingestion	Oral toxicity believed to be low but no LD50 has been established.
Inhalation	Unknown, vapors are very unlikely due to physical properties (insoluble solid).
11d Toxicity Symptoms	
Skin Adsorption	Mild Rash.
Ingestion	Indigestion or general malaise.
Inhalation	Unknown.
11e Carcinogenicity	None known

Section 12: Ecological information

12a Eco toxicity	Not acutely harmful to plant or animal life.
12b Mobility	Insoluble, acidity or causticity may escape if wet.
12c Biodegradability	Not biodegradable.
12d Bioaccumulation	Insignificant.
12e Other adverse effects	Not Harmful to the environment.

Section 13: Disposal Considerations

13a General considerations	Material is non-hazardous. However, unused material can cause a pH change when wetted.
13b Disposal Containers	Most plastic and paper containers are suitable. Avoid use of unlined metal containers.
13c Disposal methods	No specific method necessary.
13d Sewage Disposal	Not recommended.

13e	Precautions for incineration	May release trimethylamine and toxic vapors when burned.
13f	Precautions for landfills	Resins used to remove hazardous materials may then become hazardous mixtures

Section 14: Transportation Information

14a	Transportation Class	Not classified as a dangerous good for transport by land, sea, or air.
14b	TDG	Not regulated.
14c	IATA	Not regulated.
14d	DOT (49 CFR 172.101)	Not Regulated.

Section 15: Regulatory Information

15a	CERCLA	Not regulated
15b	SARA Title III	Not regulated
15c	Clean Air act	Not regulated
15d	Clean Water Act	Not regulated
15e	TSCA	Not regulated
15f	Canadian Regulations	
	WHMIS	Not a controlled product
	TDG	Not regulated
15g	Mexican Regulations	Not Dangerous

Section 16: Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that their activities comply with federal, state, and local laws.

16a Date of Revision 31 March 2015

APPENDIX F

National Register of Historic Places Documentation

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Waltham; Street Name: sylvan; Resource Type(s): Area, Burial Ground, Building, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Waltham; Street Name: West St; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Waltham; Place: Westend; Street Name: Winter; Resource Type(s): Area, Burial Ground, Building, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

APPENDIX G

Endangered Species Act Documentation

United States Department of the Interior

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

In Reply Refer To: July 15, 2021
Consultation Code: 05E1NE00-2021-SLI-4150
Event Code: 05E1NE00-2021-E-12568
Project Name: Reservoir Woods East

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-4150
Event Code: 05E1NE00-2021-E-12568
Project Name: Reservoir Woods East
Project Type: DEVELOPMENT
Project Description: Located in Waltham, MA. Approximately 40 acres. Renovation of existing buildings and development of three new structures in the northeast portion of the site.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.39586045,-71.27191051334705,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

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

In Reply Refer To: March 03, 2022
Project Code: 2022-0015463
Project Name: Reservoir Woods East

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

To Whom It May Concern:

Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/newengland/endangeredspecies/project-review/index.html

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/birds/policies-and-regulations.php

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Project Code: 2022-0015463
Event Code: None
Project Name: Reservoir Woods East
Project Type: Commercial Development
Project Description: Located in Waltham, MA. Approximately 40 acres. Renovation of existing buildings and development of three new structures in the northeast portion of the site.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.39586045,-71.27191051334705,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency: Haley & Aldrich, Inc.
Name: Kate Lamberti
Address: 465 Medford Street Suite 2200
City: Boston
State: MA
Zip: 02129
Email lambertikatherine@gmail.com
Phone: 6178867400

Lead Agency Contact Information

Lead Agency: Environmental Protection Agency

MASSACHUSETTS AREAS OF CRITICAL ENVIRONMENTAL CONCERN
November 2010

Total Approximate Acreage: 268,000 acres
Approximate acreage and designation date follow ACEC names below.

Bourne Back River
(1,850 acres, 1989) Bourne

Canoe River Aquifer and Associated Areas (17,200 acres, 1991) Easton, Foxborough, Mansfield, Norton, Sharon, and Taunton

Cedar Swamp
(1,650 acres, 1975) Hopkinton and Westborough

Central Nashua River Valley
(12,900 acres, 1996) Bolton, Harvard, Lancaster, and Leominster

Cranberry Brook Watershed
(1,050 acres, 1983) Braintree and Holbrook

Ellisville Harbor
(600 acres, 1980) Plymouth

Fowl Meadow and Ponkapoag Bog
(8,350 acres, 1992) Boston, Canton, Dedham, Milton, Norwood, Randolph, Sharon, and Westwood

Golden Hills
(500 acres, 1987) Melrose, Saugus, and Wakefield

Great Marsh (originally designated as Parker River/Essex Bay)
(25,500 acres, 1979) Essex, Gloucester, Ipswich, Newbury, and Rowley

Herring River Watershed
(4,450 acres, 1991) Bourne and Plymouth

Hinsdale Flats Watershed
(14,500 acres, 1992) Dalton, Hinsdale, Peru, and Washington

Hockomock Swamp
(16,950 acres, 1990) Bridgewater, Easton, Norton, Raynham, Taunton, and West Bridgewater

Inner Cape Cod Bay
(2,600 acres, 1985) Brewster, Eastham, and Orleans

Kampoosa Bog Drainage Basin
(1,350 acres, 1995) Lee and Stockbridge

Karner Brook Watershed
(7,000 acres, 1992) Egremont and Mount Washington

Miscoe, Warren, and Whitehall Watersheds
(8,700 acres, 2000) Grafton, Hopkinton, and Upton

Neponset River Estuary
(1,300 acres, 1995) Boston, Milton, and Quincy

Petapawag
(25,680 acres, 2002) Ayer, Dunstable, Groton, Pepperell, and Tyngsborough

Pleasant Bay
(9,240 acres, 1987) Brewster, Chatham, Harwich, and Orleans

Pocasset River
(160 acres, 1980) Bourne

Rumney Marshes
(2,800 acres, 1988) Boston, Lynn, Revere, Saugus, and Winthrop

Sandy Neck Barrier Beach System
(9,130 acres, 1978) Barnstable and Sandwich

Schenob Brook Drainage Basin
(13,750 acres, 1990) Mount Washington and Sheffield

Squannassit
(37,420 acres, 2002) Ashby, Ayer, Groton, Harvard, Lancaster, Lunenburg, Pepperell, Shirley, and Townsend

Three Mile River Watershed
(14,280 acres, 2008) Dighton, Norton, Taunton

Upper Housatonic River
(12,280 acres, 2009) Lee, Lenox, Pittsfield, Washington

Waquoit Bay
(2,580 acres, 1979) Falmouth and Mashpee

Weir River
(950 acres, 1986) Cohasset, Hingham, and Hull

Wellfleet Harbor
(12,480 acres, 1989) Eastham, Truro, and Wellfleet

Weymouth Back River
(800 acres, 1982) Hingham and Weymouth

ACEC acreages above are based on MassGIS calculations and may differ from numbers originally presented in designation documents and other ACEC publications due to improvements in accuracy of GIS data and boundary clarifications. Listed acreages have been rounded to the nearest 50 or 10 depending on whether boundary clarification has occurred. For more information please see, http://www.mass.gov/dcr/stewardship/acec/aboutMaps.htm.

Towns with ACECs within their Boundaries November 2010

TOWN	ACEC
Ashby	Squannassit
Ayer	Petapawag
	Squannassit
Barnstable	Sandy Neck Barrier Beach System
Bolton	Central Nashua River Valley
Boston	Rumney Marshes
	Fowl Meadow and Ponkapoag Bog
	Neponset River Estuary
Bourne	Pocasset River
	Bourne Back River
	Herring River Watershed
Braintree	Cranberry Brook Watershed
Brewster	Pleasant Bay
	Inner Cape Cod Bay
Bridgewater	Hockomock Swamp
Canton	Fowl Meadow and Ponkapoag Bog
Chatham	Pleasant Bay
Cohasset	Weir River
Dalton	Hinsdale Flats Watershed
Dedham	Fowl Meadow and Ponkapoag Bog
Dighton	Three Mile River Watershed
Dunstable	Petapawag
Eastham	Inner Cape Cod Bay
	Wellfleet Harbor
Easton	Canoe River Aquifer
	Hockomock Swamp
Egremont	Karner Brook Watershed
Essex	Great Marsh
Falmouth	Waquoit Bay
Foxborough	Canoe River Aquifer
Gloucester	Great Marsh
Grafton	Miscoe-Warren-Whitehall Watersheds
Groton	Petapawag
	Squannassit
Harvard	Central Nashua River Valley
	Squannassit
Harwich	Pleasant Bay
Hingham	Weir River
	Weymouth Back River
Hinsdale	Hinsdale Flats Watershed
Holbrook	Cranberry Brook Watershed
Hopkinton	Miscoe-Warren-Whitehall Watersheds
	Cedar Swamp
Hull	Weir River
Ipswich	Great Marsh
Lancaster	Central Nashua River Valley
	Squannassit
Lee	Kampoosa Bog Drainage Basin
	Upper Housatonic River
Lenox	Upper Housatonic River
Leominster	Central Nashua River Valley
Lunenburg	Squannassit
Lynn	Rumney Marshes
Mansfield	Canoe River Aquifer
Mashpee	Waquoit Bay
Melrose	Golden Hills
Milton	Fowl Meadow and Ponkapoag Bog
	Neponset River Estuary
Mt. Washington	Karner Brook Watershed
	Schenob Brook
Newbury	Great Marsh
Norton	Hockomock Swamp
	Canoe River Aquifer
	Three Mile River Watershed
Norwood	Fowl Meadow and Ponkapoag Bog
Orleans	Inner Cape Cod Bay
	Pleasant Bay
Pepperell	Petapawag
	Squannassit
Peru	Hinsdale Flats Watershed
Pittsfield	Upper Housatonic River
Plymouth	Herring River Watershed
	Ellisville Harbor
Quincy	Neponset River Estuary
Randolph	Fowl Meadow and Ponkapoag Bog
Raynham	Hockomock Swamp
Revere	Rumney Marshes
Rowley	Great Marsh
Sandwich	Sandy Neck Barrier Beach System
Saugus	Rumney Marshes
	Golden Hills
Sharon	Canoe River Aquifer
	Fowl Meadow and Ponkapoag Bog
Sheffield	Schenob Brook
Shirley	Squannassit
Stockbridge	Kampoosa Bog Drainage Basin
Taunton	Hockomock Swamp
	Canoe River Aquifer
	Three Mile River Watershed
Truro	Wellfleet Harbor
Townsend	Squannassit
Tyngsborough	Petapawag
Upton	Miscoe-Warren-Whitehall Watersheds
Wakefield	Golden Hills
Washington	Hinsdale Flats Watershed
	Upper Housatonic River
Wellfleet	Wellfleet Harbor
W Bridgewater	Hockomock Swamp
Westborough	Cedar Swamp
Westwood	Fowl Meadow and Ponkapoag Bog
Weymouth	Weymouth Back River
Winthrop	Rumney Marshes

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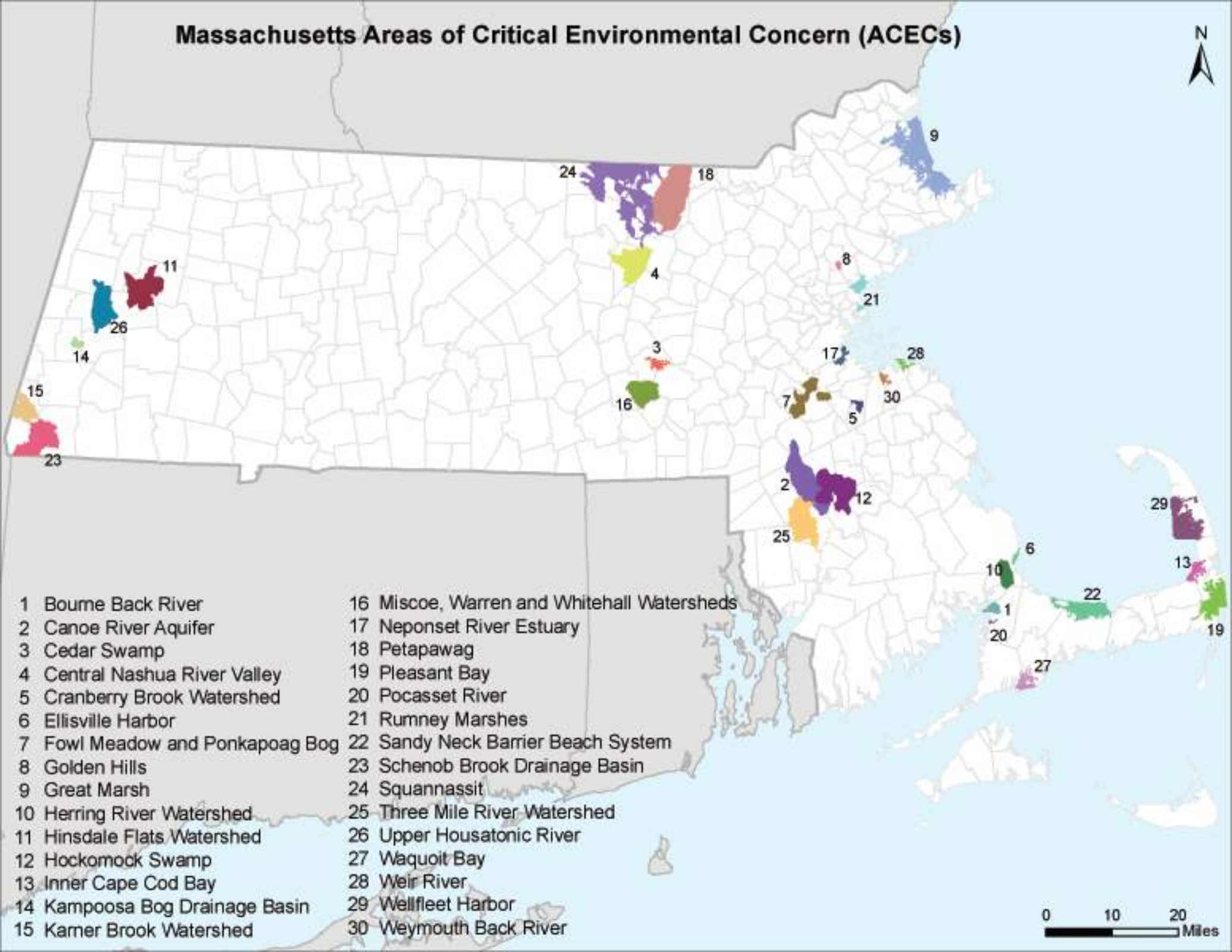
Town	Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation	County
WALTHAM	Amphibian	Ambystoma laterale	Blue-spotted Salamander	T	2018	MIDDLESEX
WALTHAM	Amphibian	Ambystoma opacum	Marbled Salamander	T	1800s	MIDDLESEX
WALTHAM	Vascular Plant	Asclepias verticillata	Linear-leaved Milkweed	T	2009	MIDDLESEX
WALTHAM	Beetle	Cicindela purpurea	Cow Path Tiger Beetle	SC	1897	MIDDLESEX
WALTHAM	Beetle	Cicindela rufiventris hentzii	Eastern Red-bellied Tiger Beetle	T	2016	MIDDLESEX
WALTHAM	Bird	Circus cyaneus	Northern Harrier	T	1879	MIDDLESEX
WALTHAM	Crustacean	Eubranchipus intricatus	Intricate Fairy Shrimp	SC	1904	MIDDLESEX
WALTHAM	Bird	Haliaeetus leucocephalus	Bald Eagle	T	2018	MIDDLESEX
WALTHAM	Vascular Plant	Houstonia longifolia	Long-leaved Bluet	E	1910	MIDDLESEX
WALTHAM	Vascular Plant	Linum medium var. texanum	Rigid Flax	T	1908	MIDDLESEX
WALTHAM	Vascular Plant	Ludwigia sphaerocarpa	Round-fruited False-loosestrife	E	1881	MIDDLESEX
WALTHAM	Dragonfly/Damselfly	Neurocordulia obsoleta	Umber Shadowdragon	SC	1997	MIDDLESEX
WALTHAM	Vascular Plant	Oxalis violacea	Violet Wood-sorrel	E	1883	MIDDLESEX
WALTHAM	Vascular Plant	Platanthera flava var. herbiola	Pale Green Orchis	T	1886	MIDDLESEX
WALTHAM	Dragonfly/Damselfly	Somatochlora linearis	Mocha Emerald	SC	2012	MIDDLESEX
WALTHAM	Bird	Vermivora chrysoptera	Golden-winged Warbler	E	1906	MIDDLESEX

Massachusetts Areas of Critical Environmental Concern (ACECs)



1 Bourne Back River
2 Canoe River Aquifer
3 Cedar Swamp
4 Central Nashua River Valley
5 Cranberry Brook Watershed
6 Ellisville Harbor
7 Fowl Meadow and Ponkapoag Bog
8 Golden Hills
9 Great Marsh
10 Herring River Watershed
11 Hinsdale Flats Watershed
12 Hockomock Swamp
13 Inner Cape Cod Bay
14 Kampoosa Bog Drainage Basin
15 Karner Brook Watershed
16 Miscoe, Warren and Whitehall Watersheds
17 Neponset River Estuary
18 Petapawag
19 Pleasant Bay
20 Pocasset River
21 Rumney Marshes
22 Sandy Neck Barrier Beach System
23 Schenob Brook Drainage Basin
24 Squannassit
25 Three Mile River Watershed
26 Upper Housatonic River
27 Waquoit Bay
28 Weir River
29 Wellfleet Harbor
30 Weymouth Back River