HALEY & ALDRICH, INC.
465 Medford St.
Suite 2200
Boston, MA 02129
617.886.7400

2 July 2018
File No. 34250-844

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

Attention: Ms. Shelley Puleo; EPA/OEP RGP Applications Coordinator

Subject: Temporary Construction Dewatering
50 Rogers Street
Cambridge, Massachusetts

Dear Ms. Puleo:

On behalf of our client, ARE-MA No. 62, LLC (ARE), Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this submission to facilitate off-site discharge of temporary dewatering during building construction activities at the proposed 50 Rogers Street development (the "site"), located in Cambridge, Massachusetts (See Figure 1). The information presented herein has been prepared to follow requirements of the 2017 US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Remediation General Permit (RGP). A copy of the completed Notice of Intent (NOI) form is enclosed as Appendix A.

EXISTING SITE CONDITIONS

The new development site herein referred to as "50 Rogers Street" consists of two parcels of land at 50 Rogers Street and 161 First Street that will be consolidated and subdivided into two new Lots. The new development (Lot 1) is a 35,006 square feet (sf) parcel of land shown on Figure 2 consisting of a portion of 161 First Street property and the entire 50 Rogers Street property. The current 161 First Street property is occupied by a two-story "Annex" building (to be demolished) connected to a four-story brick building (to remain). The first floor of both buildings is partially below-grade. The remainder of the 161 First Street property consists of at-grade asphalt paved parking and landscaping. Existing site grades at the 161 First Street property range from El. 20.5 to El. 21[1] near Rogers Street to El. 23 to 24 near Binney Street. The 50 Rogers Street parcel is currently an open paved parking lot with existing grades ranging from El. 20 to El. 21.

The site is bordered by Rogers Street to the north, First Street to the east, and Binney Street to the south. An existing building borders the site to the west at 65 Binney Street and is occupied by The Church of Jesus Christ of Latter-day Saints (the Church).

1. Elevations reported herein are in feet and reference the Cambridge City Base (CCB) Datum.

SITE HISTORY

50 Rogers Street

According to the Sanborn Maps, available historical plans, and reports prepared by others as well as Haley & Aldrich project files at and in the vicinity of the subject property, the current 50 Rogers Street property was formerly marshlands associated with the Charles River until about 1888. The area was filled in the 1890s. The 50 Rogers Street property remained undeveloped until the 1930s, when a building was first constructed in the southern portion of the parcel. A.F. Boiler Works occupied this building until the 1960s. The building was demolished in the 1960s or 1970s and converted to a paved parking lot. ARE acquired the parcel consisting of the entire property addressed as 50 Rogers Street in 2007 and maintained the property as a parking lot. In early 2008, the property was subdivided, and the western three-quarters of the lot was sold to the LDS Church, while ARE retained the eastern quarter (approximately 0.23 acres). The use of this parcel remained a paved parking lot until the proposed development.

161 First Street

Previous reports prepared by Environ (previous site consultant) indicate that the first development at 161 First Street included construction of the existing four-story brick building in 1907. A half-basement exists in this building. The 1934 Sanborn map shows the site was occupied by the four-story brick building and other attached buildings. The buildings were used by the Ashton Valve Company which included a foundry for manufacturing of valves, a boiler room, and coal storage area. The 1950 Sanborn map shows the same building layout, however the buildings, with the exception of the foundry still operated by the valve company, housed the Nicholson & Co. glue factory. The 1986 Sanborn map shows the property occupied by the glue factory and a warehouse constructed in the 1970s and used for shipping and receiving located south of the former foundry. The 1990 and 1992 Sanborn maps show the warehouse was demolished, and the site was occupied by the Cuneo Press of New England Inc. (book publishing plant). Records indicate that Lotus Development Corp (spreadsheet software developers) acquired the property in the 1990s and that the basement of the original building was used as a machine shop for design and assembly of active motion control systems. No significant changes to the buildings are noted on the Sanborn Maps in the 1990s and 2000s. The buildings were most recently used for office and laboratory space, until they were vacated in March 2018 for the new development.

ENVIRONMENTAL CONDITIONS AND REGULATORY BACKGROUND

The development property is associated with three Release Tracking Numbers (RTNs) as described below:

161 First Street (RTN 3-25556)

A Class B-2 Response Action Outcome (RAO) Statement was filed for the 161 First Street property by Environ on 22 January 2007, which concluded that no further Response/Remedial Actions are required at the property with the implementation of an Activity and Use Limitation (AUL) to maintain a condition of No Significant Risk. The AUL was implemented on the entire property on 22 January 2007.

50 Rogers Street (RTN 3-27626)

A Class B-1 Response Action Outcome (RAO) Statement was filed for the smaller 50 Rogers Street property on the west side of the current site by Haley & Aldrich in April 2013 to achieve regulatory closure for RTN 3-27626. The MCP Phase II report concluded that current conditions do not pose risk to human health and that MCP Phase III and Phase IV were not necessary to achieve a Permanent Solution.

New Site Development (RTN 3-34863)

Based on the soil precharacterization data from subsurface exploration programs conducted by Haley & Aldrich between November 2017 and March 2018, a new Release Notification Form (RNF) was prepared and submitted to MassDEP on 28 March 2018 for the development site. MassDEP assigned RTN 3-34863 to the site on 29 March 2018 for the presence of Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), metals (arsenic, lead, mercury, and zinc), and Total Petroleum Hydrocarbons (TPH) above the applicable MCP Reportable Concentrations for soil (RCS-1). Development activities will be conducted under a Release Abatement Measure (RAM) Plan which has been filed with MassDEP. Upon removal of contaminated soils from the building site, a RAM Completion Report and a Permanent Solution Statement will be filed to achieve regulatory closure for the release.

PROPOSED CONSTRUCTION

The proposed project consists of a six-story residential development with two levels of below-grade parking. The proposed below-grade footprint is approximately 30,000 sf, the approximate limit of which is shown on Figure 2. The building is planned to be supported on concrete footing foundations bearing in the natural inorganic soils (Marine Clay) underlying the site. An interlocking steel sheetpile wall is planned to provide temporary excavation support and groundwater cut-off. Dewatering will be required to allow for construction of the below-grade space in-the-dry. The lowest level floor slab is planned at El. -1.75, approximately 22 ft from current street grades; bottom of excavation for footings is anticipated to range from approximately El. -4 to El. -6, locally deeper excavations will be required for sub-slab pits and structures.

CURRENT GROUNDWATER QUALITY INFORMATION

To evaluate groundwater quality at the site, a groundwater sample was collected obtained from the observation well HA11-01 on 23 November 2011. The sample was submitted to Alpha Analytical, Inc. of Westborough, Massachusetts (Alpha) for analysis of VOCs, Extractable Petroleum Hydrocarbons (EPH), Volatile Petroleum Hydrocarbons (VPH), and dissolved RCRA 8 metals. Results of the analyses indicated concentrations below 2010 NPDES RGP effluent criteria and applicable RCGW-2 Reportable Concentrations.

On 15 December 2017, two groundwater samples were collected from HA-D4 and HA-C2 to evaluate groundwater quality and meet the requirements of the 2017 NPDES RGP NOI, respectively. The sample from HA-D4 was submitted to Alpha for analysis of VOCs, SVOCs, EPH and VPH. The sample from HA-C2 sample was submitted to Alpha Analytical for analysis of VOCs, SVOCs, Total Metals, TPH, pesticides PCBs, TSS, Total Residual Chlorine, Chloride, Total Cyanide, Ammonia, Total Phenolics and hardness.

Results of the analyses indicated concentrations below 2017 NPDES RGP effluent criteria and applicable RCGW-2 Reportable Concentrations.

On 17 April 2018, two groundwater samples were collected from HA-C2 and HA11-01A to evaluate groundwater quality and meet the requirements of the 2017 NPDES RGP NOI, respectively. The samples were submitted to Alpha for analysis of VOCs, EPH and VPH. Results of the analyses indicated concentrations below the calculated 2017 NPDES RGP effluent criteria (see Effluent Criteria Determination section and Appendix B) and applicable RCGW-2 Reportable Concentrations.

The locations of the observation wells are shown on Figure 2. The results of the 2017 and 2018 sampling programs are provided in Table I. Laboratory data reports are included in Appendix H.

ETHANOL SAMPLING

Ethanol sampling was not conducted on the groundwater sample as site history does not suggest that ethanol was stored at the property, nor that a petroleum product containing ethanol was released at the site. Ethanol has been increasingly used in fuels since 2006 (according to the 2016 NOI Fact Sheet), and according to site history, the site has been used as a paved parking lot since the 1960s or 1970s.

RECEIVING WATERS SAMPLING AND DILUTION FACTOR

On 13 April 2018, one sample was collected from the CAM017 outfall location into the Charles River and submitted to Alpha Analytical to be analyzed for hardness, ammonia and total metals. The laboratory data report is enclosed in Appendix H. The results of this sampling program are provided in Table II.

The pH and temperature readings collected in the field were used to calculate the site Water Quality Based Effluent Limitations (WQBELs). It is our understanding that since the receiving water is a freshwater body, salinity does not need to be analyzed on either the effluent water or receiving water.

The seven-day-ten-year flow (7Q10) of the receiving water was established using the U.S. Geological Survey (USGS) StreamStats program and confirmed by Massachusetts Department of Environmental Protection (MassDEP) on 20 April 2018. We have additionally confirmed with the MassDEP that the dilution factor for the receiving waters is 88.36. The StreamStats Report, Dilution Factor calculations, and confirmation from MassDEP are included in Appendix B.

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 B. The effluent limitations calculated are included for reference in Table I.

DEWATERING SYSTEM AND OFF-SITE DISCHARGE

During construction of the building, it will be necessary to perform temporary dewatering to control surface water runoff from precipitation, groundwater seepage, and construction-generated water to enable construction in-the-dry. Construction and construction dewatering activities are currently anticipated to be required for a period of up to 12 months. On average, we estimate effluent discharge rates of about 50 to 100 gallons per minute (gpm) or less, with occasional peak flows of approximately 150 gpm during significant precipitation events. Temporary dewatering will be conducted from sumps located in excavations.

Construction dewatering will include piping and discharging to a storm drain located near the site that discharges into the Charles River through outfall CAM017. The proposed discharge route is shown on Figure 3. Prior to discharge, collected water will be routed through a sedimentation tank and bag filters and other necessary treatment components, to remove suspended solids and undissolved chemical constituents, as shown on Figure 4. The contractor's dewatering submittal documents are included in Appendix D. A Notice of Change (NOC) will be submitted to EPA if additional treatment components need to be mobilized at the site.

DOCUMENTATION OF NATIONAL HISTORIC PRESERVATION ACT ELIGIBILITY REQUIREMENTS

Based on a review of the resources provided by the U.S. National Register of Historic Places and a review of the Massachusetts Cultural Resource Information System (MACRIS), no historic properties have been established to be present at the project site, and discharges and discharge-related activities are not considered to have the potential to affect historic properties. The discharge is considered to meet Criterion A. Documentation is included in Appendix E.

DETERMINATION OF ENDANGERED SPECIES ACT ELIGIBILITY

According to the guidelines outlined in Appendix I 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 attached in Appendix F. 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 have been established to be present within the project action area.

SUPPLEMENTAL INFORMATION

An application for a temporary construction dewatering permit has been submitted to the City of Cambridge by the contractor; a copy of the application is provided in Appendix C. Approval will be received prior to the start of discharge. A Best Management Practices Plan (BMPP), which outlines the proposed discharge operations covered under the RGP, will be available at the site and is included in Appendix G.

Owner and Operator Information

Owner:
ARE-MA Region No. 62, LLC
400 Technology Square Suite 101
Cambridge, MA 02139
Attn: Bill DePippo

Operator:
Consigli Construction Co, Inc.
266 Summer Street
Boston, MA 02210
Attn: Justin Pollard

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.

Grace Daylor, EIT
Engineer

Keith E. Johnson, P.E., LSP
Vice President

Attachments:

Table I – Summary of Groundwater Quality Data
Table II – Summary of Receiving Water Data
Figure 1 – Project Locus
Figure 2 – Site and Subsurface Exploration Location Plan and Limits of RAM Activities
Figure 3 – Proposed Discharge Routes
Figure 4 – Proposed Treatment System Schematic
Appendix A – Notice of Intent (NOI)
Appendix B – Dilution Factor and Effluent Limit Calculations
Appendix C – Copy of City of Cambridge Dewatering Permit Application
Appendix D – Contractor's Dewatering System Schematic
Appendix E – National Register of Historic Places Documentation
Appendix F – Endangered Species Act Documentation
Appendix G – Best Management Practices Plan (BMPP)
Appendix H – Laboratory Data Reports

TABLE I
SUMMARY OF GROUNDWATER QUALITY DATA
50 ROGERS STREET
CAMBRIDGE, MA
FILE NO. 34250-840

Location Name Sample Name Sample Date Lab Sample ID	MCP 2014 RCGW-2 Reportable Concentration	2017 NPDES RGP Project-Specific Effluent Limit	HA-C2 HA-C2(OW)-NPDES_2017-1215 12/15/2017 L1746498-01	HA-C2 HA-C2_2018-0417 04/17/2018 L1813322-01	HA-D4 HA-D4(OW)_2017-1215 12/15/2017 L1746496-01	HA11-01A HA11-01A_2018-0417 04/17/2018 L1813322-02
Volatile Organic Compounds (ug/L)						
SUM of Volatile Organic Compounds	NA	NA	ND	ND	ND	ND
Volatile Organic Compounds SIM (ug/L)						
1,4-Dioxane			ND (3)		-	
Semi-Volatile Organic Compounds (ug/L)						
SUM of Semi-Volatile Organics Compounds	NA	NA	ND	-	ND	-
Semi-Volatile Organic Compounds (SIM) (ug/L)						
1-Methylnaphthalene	NA	NA	0.25	-	-	-
2-Methylnaphthalene	2000	NA	0.26	-	ND (0.1)	-
Acenaphthene	6000	100**	2.3	-	0.48	-
Anthracene	30	100**	0.19	-	0.38	-
Fluoranthene	200	100**	0.86	-	0.71	-
Fluorene	40	100**	0.45	-	0.3	-
Naphthalene	700	20	0.48	-	0.13	-
Phenanthrene	10000	100**	0.94	-	1.3	-
Pyrene	20	100**	0.61	-	0.54	-
SUM of Semi-Volatile Organic Compounds (SIM)	NA	NA	6.34	-	3.84	-
Total Petroleum Hydrocarbons (mg/L)						
Oil and Grease (HEM), Total			-		-	
Petroleum hydrocarbons	5	NA	**ND (5.2)**	**-**	-	-
EPH (ug/L)						
C11-C22 Aromatic Hydrocarbons, Adjusted	5000	NA	-	ND (100)	ND (100)	ND (100)
C19-C36 Aliphatic Hydrocarbons	50000	NA	-	ND (100)	ND (100)	ND (100)
C9-C18 Aliphatic Hydrocarbons	5000	NA	-	ND (100)	ND (100)	ND (100)
VPH (ug/L)						
C5-C8 Aliphatic Hydrocarbons, Adjusted	3000	NA	-	ND (50)	ND (50)	ND (50)
C9-C10 Aromatic Hydrocarbons	4000	NA	-	ND (50)	ND (50)	ND (50)
C9-C12 Aliphatic Hydrocarbons, Adjusted	5000	NA	-	ND (50)	ND (50)	ND (50)
Total Metals (mg/L)						
Antimony	8	0.206	ND (0.004)	-	-	-
Arsenic	0.9	0.104	ND (0.001)	-	-	-
Cadmium	0.004	0.0102	ND (0.0002)	-	-	-
Chromium	0.3	0.323	ND (0.001)	-	-	-
Chromium III (Trivalent)	0.6	0.323	ND (0.01)	-	-	-
Chromium VI (Hexavalent)	0.3	0.323	ND (0.01)	-	-	-
Copper	100	0.242	ND (0.001)	-	-	-
Cyanide	0.03	0.178	ND (0.005)	-	-	-
Hardness	NA	NA	459	-	-	-
Iron	NA	5	4.99	-	-	-
Lead	0.01	0.16	ND (0.001)	-	-	-
Mercury	0.02	0.000739	ND (0.0002)	-	-	-
Nickel	0.2	1.45	ND (0.002)	-	-	-
Selenium	0.1	0.2358	ND (0.005)	-	-	-
Silver	0.007	0.0351	ND (0.0004)	-	-	-
Zinc	0.9	0.42	ND (0.01)	-	-	-
Pesticides (ug/L)						
1,2-Dibromo-3-chloropropane (DBCP)	NA	NA	ND (0.01)	-	-	-
1,2-Dibromoethane (Ethylene Dibromide)	2	NA	ND (0.01)	-	-	-
PCBs (ug/L)						
SUM of PCBs	5	0.000064	ND	-	-	-
Other						
Total Ammonia (mg/L)	NA	Report	1.44	-	-	-
Total Chloride (mg/L)	NA	Report	950	-	-	-
Total Residual Chlorine (mg/L)	NA	0.2	ND (0.02)	-	-	-
Total phenols (mg/L)	NA	NA	ND (0.03)	-	-	-
Total Suspended Solids (TSS) (mg/L)	NA	30	13	-	-	-

ABBREVIATIONS:
- : Not analyzed
NA: Not Applicable
ND (2.5): Result not detected above reporting limit (shown in parentheses)

NOTES:
1. Volatile and Semi-Volatile Organics Compounds detected in at least one sample are reported herein. For a complete list of analytes see the laboratory data sheets.
2. **Bold** values indicate an exceedance of the MCP GW-2 criteria.
4. **: Indicates effluent limit is limited as total Group II PAHs of 100 ug/l

TABLE II

SUMMARY OF RECEIVING WATER QUALITY DATA
50 ROGERS STREET
CAMBRIDGE, MA
FILE NO. 34250-840

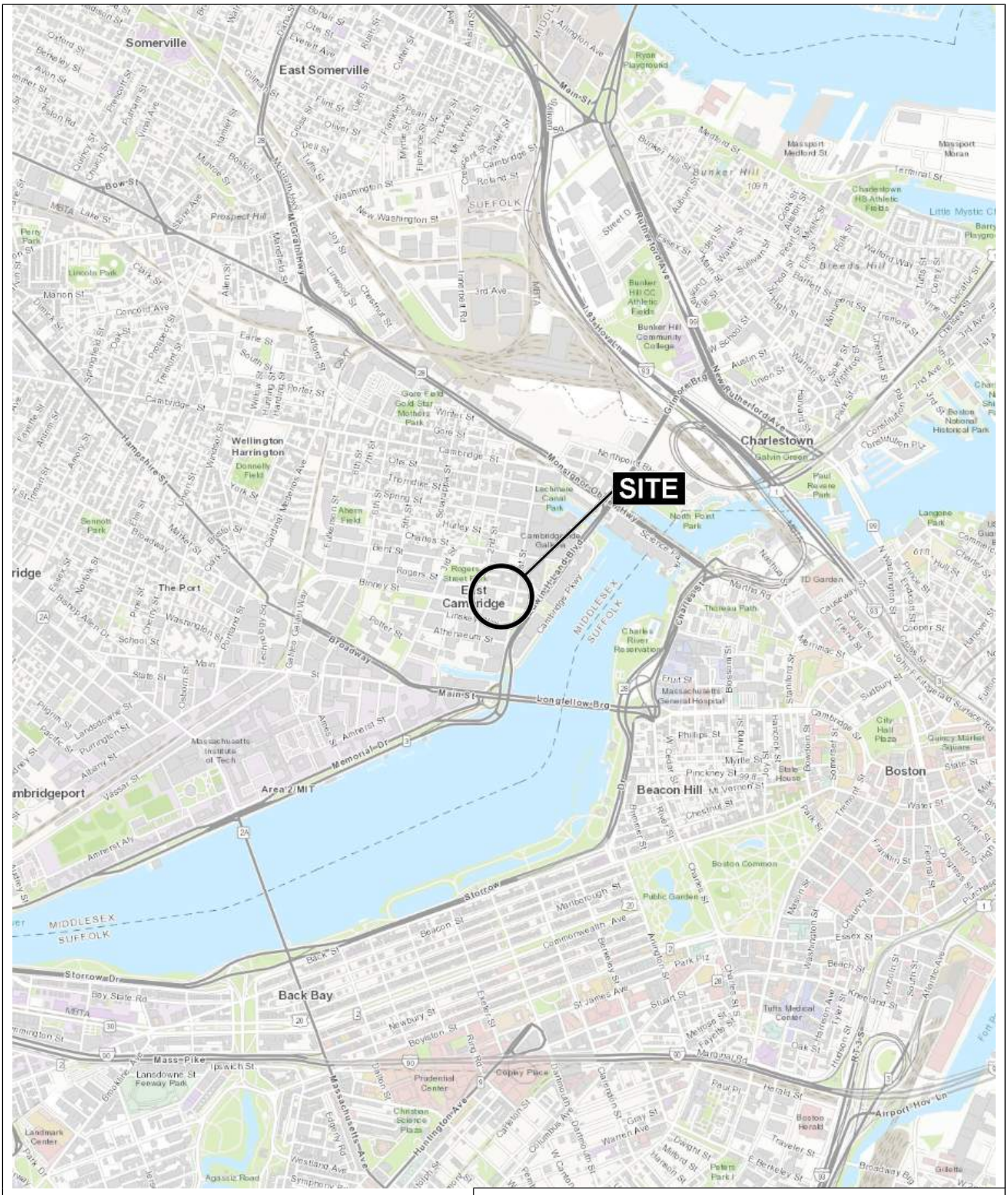
Location Name	CHARLES RIVER CAM017
Sample Name	2018-0413-CHARLES_CAM017
Sample Date	4/13/2018
Lab Sample ID	L1813049-01 L1813321-01
Total Metals (mg/L)	
Antimony	ND (0.004)
Arsenic	ND (0.001)
Cadmium	ND (0.0002)
Chromium	0.00106
Chromium III (Trivalent)	ND (0.01)
Chromium VI (Hexavalent)	ND (0.01)
Copper	0.00193
Iron	0.334
Lead	0.00117
Mercury	ND (0.0002)
Nickel	ND (0.002)
Selenium	ND (0.005)
Silver	ND (0.0004)
Zinc	ND (0.01)
Other	
Total Ammonia (mg/L)	ND (0.075)
Hardness	82.3
Temperature °C	9
pH	7.51

ABBREVIATIONS:

- : Not analyzed
NA: Not Applicable
ND (2.5): Result not detected above reporting limit (shown in parentheses)

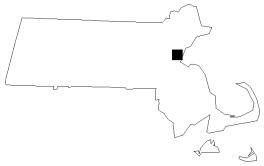
NOTES:

1. Readings of temperature and pH are measured in the field



MAP SOURCE: ESRI

SITE COORDINATES: 42°21'56"N, 71°4'43"W



HALEY ALDRICH

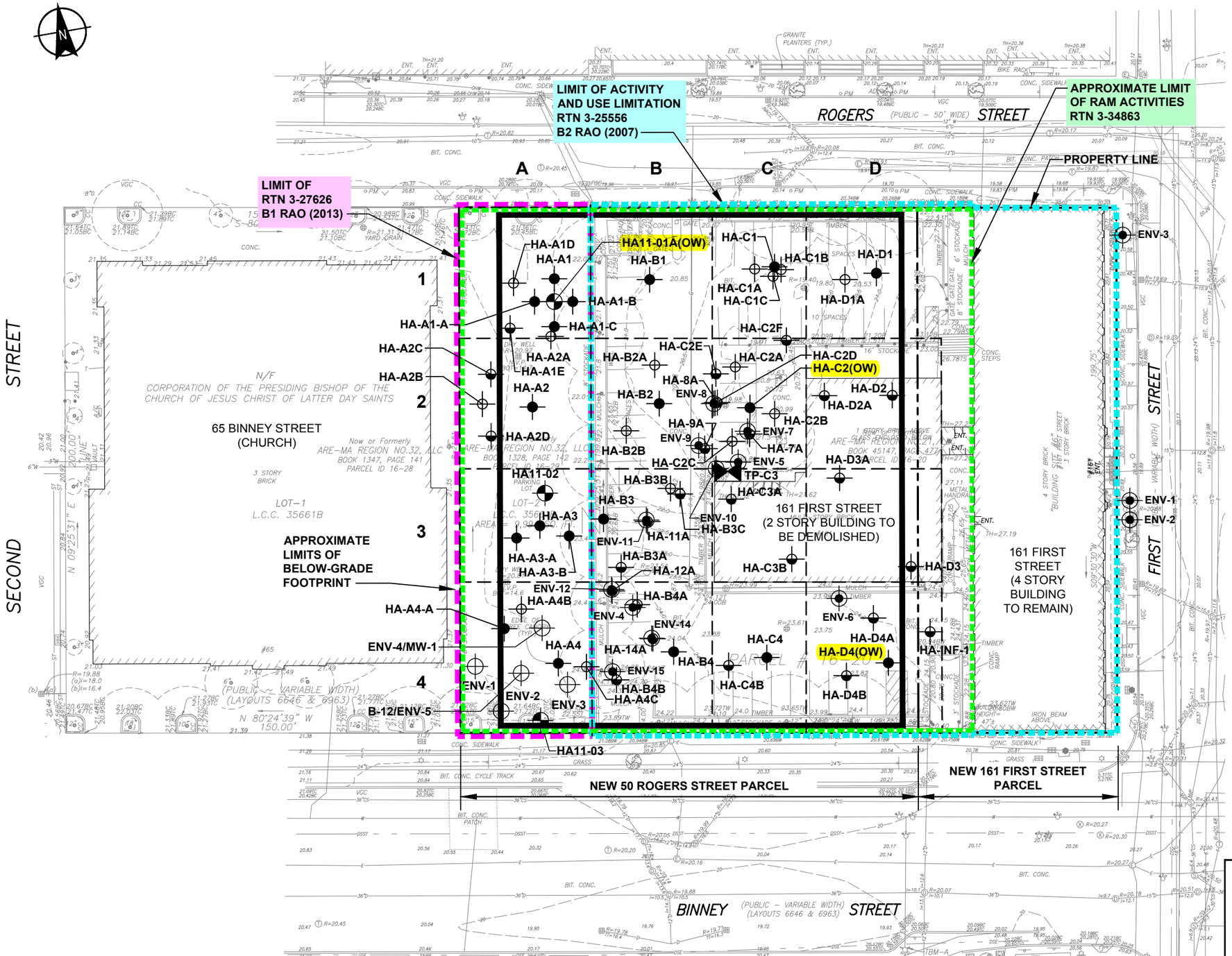
50 ROGERS STREET
CAMBRIDGE, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
APRIL 2018

FIGURE 1

34250-840_1_LOCUS.PDF



LEGEND

HA-B3C	DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE DRILLED BY G & M SUBSURFACE LLC AND NEW ENGLAND GEOTECH, LLC IN MARCH 2018 AND MONITORED BY HALEY & ALDRICH, INC.
HA-A1E	DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE DRILLED BY G & M SUBSURFACE LLC IN FEBRUARY 2018 AND MONITORED BY HALEY & ALDRICH, INC.
TP-C3	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY W.L. FRENCH CORP. ON 12 FEBRUARY 2018 AND OBSERVED BY HALEY & ALDRICH, INC.
HA-A1	DESIGNATION AND APPROXIMATE LOCATION OF GEOPROBE DRILLED BY G & M SUBSURFACE LLC IN NOVEMBER 2017 AND MONITORED BY HALEY & ALDRICH, INC.
HA11-02	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY GEOLOGIC-EARTH EXPLORATION, INC. OF NORFOLK, MASSACHUSETTS ON 15 AND 16 NOVEMBER 2011
ENV-1	DESIGNATION AND APPROXIMATE LOCATION OF EXPLORATION BY OTHERS IN 2010
ENV-1	DESIGNATION AND APPROXIMATE LOCATION OF EXPLORATION BY OTHERS IN 2005 AND 2006
(OW)	INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE

NOTES

1. BASE PLAN OBTAINED FROM ELECTRONIC FILE TITLED "55 ROGERS STREET_MASTER SURVEY.DWG", PROVIDED BY KLEINFELDER ON 5 DECEMBER 2017
2. ELEVATIONS ARE IN FEET AND REFERENCE THE CAMBRIDGE CITY BASE (CCB) DATUM.
3. APPROXIMATE LIMITS OF BELOW-GRADE FOOTPRINT OBTAINED FROM PLAN TITLED "B2 PARKING - LOWER LEVEL FOUNDATION PLAN", PREPARED BY LA FUESS PARTNERS, DATED 20 MARCH 2017.

0 40 80
SCALE IN FEET

HALEY ALDRICH

50 ROGERS STREET DEVELOPMENT
CAMBRIDGE, MASSACHUSETTS

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN AND LIMITS OF RAM ACTIVITIES

SCALE: AS SHOWN
APRIL 2018

FIGURE 2

ERVIN, DAYNA Printed: 4/23/2018 3:03 PM Layout: B596
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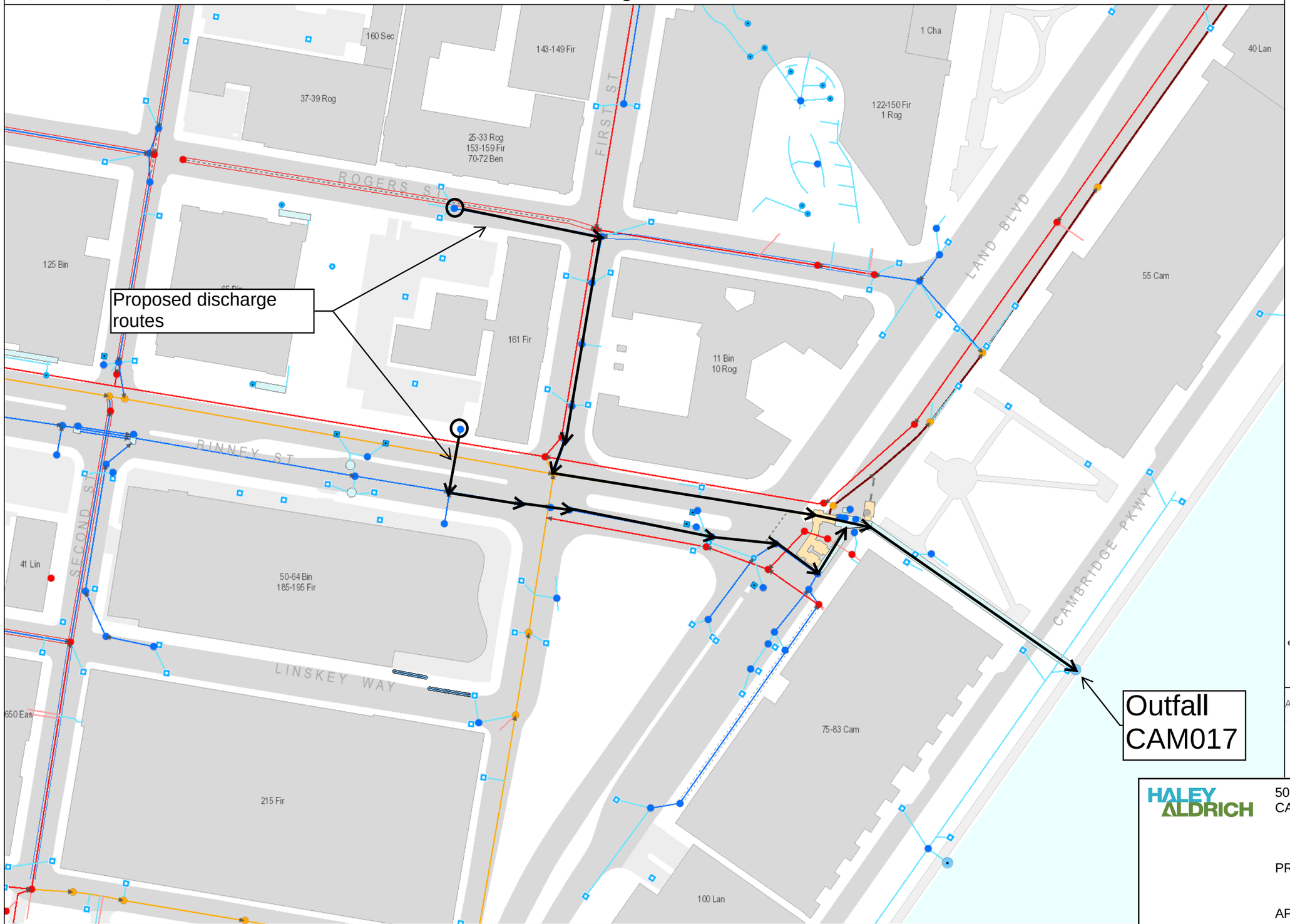
City of Cambridge

50 Rogers Street

April 5, 2018



LEGEND

Outfalls
- Stormwater
- Combined Sewer Overflo
- Abandoned

Pumping Structures
- Pump Station
- Lift Station

Manholes
- Stormwater
- Sewage
- Combined Sewage
- Abandoned

Lampholes
- LampHole, Sewage
- LampHole, Storm Runoff

Catchbasins
- Standard Sump
- Drop Inlet
- Area Drain
- Drywell
- Oil/Water Separator
- Abandoned

Trench Drains

Service Laterals
- Combined Wastewater, In
- Stormwater
- Sewage
- Abandoned

Force Mains
- Combined Wastewater
- Sewage
- Storm Runoff

MWRA Mains
- Abandoned
- In Service

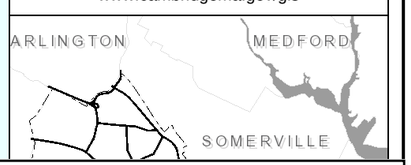
Underground Structures
- Stormwater
- Sewage
- Combined Sewage

Zoom Three Paved Surfaces
- Paved Roads
- Other Paved Surface
- Bridges
- Public Footpath

City of Cambridge
Massachusetts

1" = 96 ft

www.cambridgema.gov/gis



HALEY ALDRICH

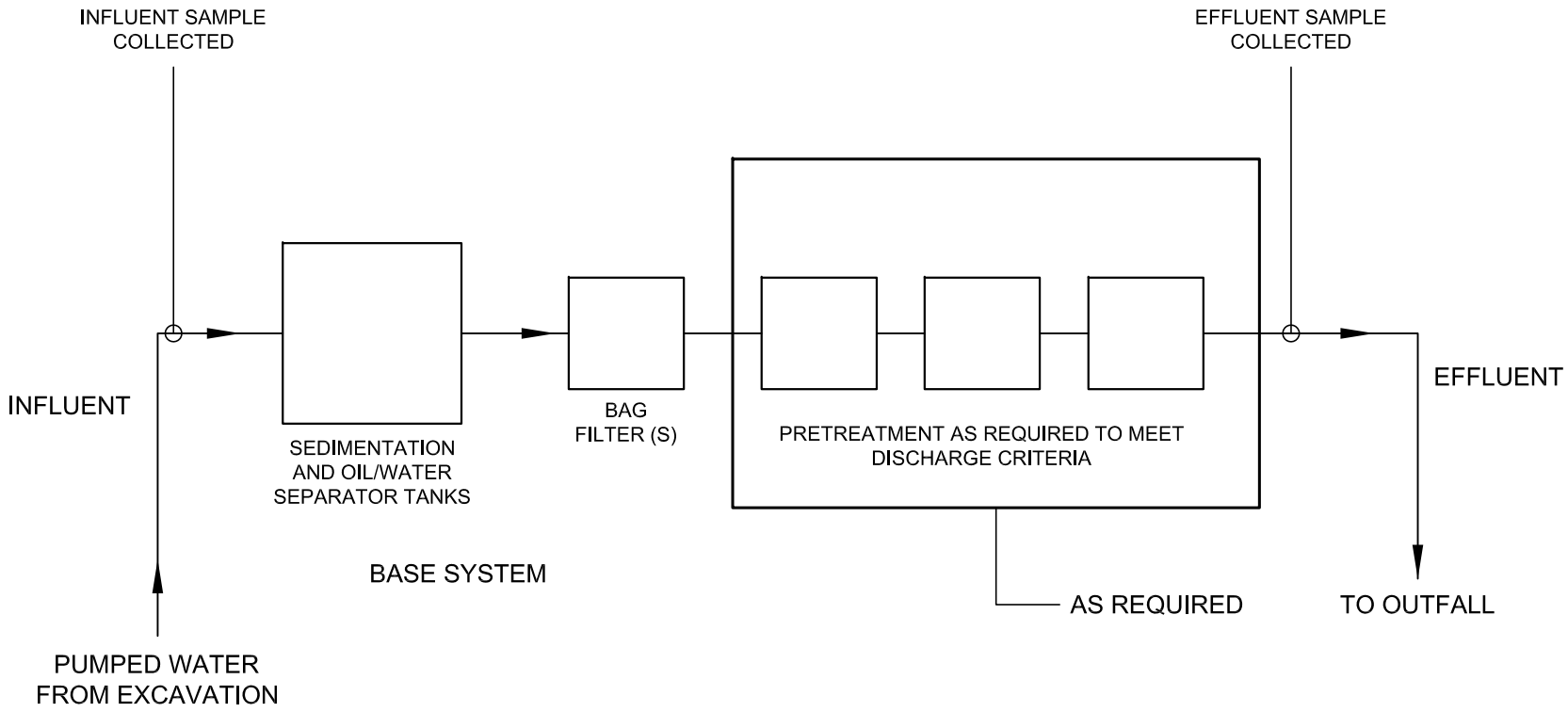
50 ROGERS STREET
CAMBRIDGE, MASSACHUSETTS

PROPOSED DISCHARGE ROUTES

APRIL 2018

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.

HALEY ALDRICH

50 ROGERS STREET
CAMBRIDGE, MASSACHUSETTS

PROPOSED TREATMENT SYSTEM SCHEMATIC

SCALE: NONE
APRIL 2018

FIGURE 4

APPENDIX A

Notice of Intent (NOI)

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:
50 Rogers Street</td><td colspan="3">Site address: 50 Rogers Street
Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02142</td></tr>
<tr><td rowspan="4">2. Site owner
ARE-MA NO. 62, LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: William DePippo</td></tr>
<tr><td colspan="2">Telephone: 6172524904</td><td>Email: wdepippo@are.com</td></tr>
<tr><td colspan="3">Mailing address: 400 Technology Square Suite 101
Street:</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 Co, Inc.</td><td colspan="3">Contact Person: Justin Pollard</td></tr>
<tr><td colspan="2">Telephone: 7745735693</td><td>Email: JPollard@consigli.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 266 Summer Street</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02210</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
Not applicable

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):
3-34863, 3-25556
☐ 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):
Charles River	MA72-38	Class B

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. TMDL for phosphorus and pathogens

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.	18.87 MGD
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.	88.36

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: 4/20/2018

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

2. Source water contaminants: SVOCs, iron, ammonia, chloride	
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.	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): CAM-017	Outfall location(s): (Latitude, Longitude) 42.3646, -71.0762
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ☐ Indirect discharge, if so, specify: ☐ 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: City of Cambridge permit being submitted concurrently. Approval will be received prior to start of discharge. 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): July 2018 - June 2019 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		✓	1	4500NH3	75	1440	1440	Report mg/L	---
Chloride		✓	1	300.0	12500	950000	950000	Report µg/l	---
Total Residual Chlorine	✓		1	4500CL-	20	ND	ND	0.2 mg/L	
Total Suspended Solids		✓	1	2540D	5000	13000	13000	30 mg/L	---
Antimony		✓	1	200.8	4	ND	ND	206 µg/L	
Arsenic		✓	1	200.8	1	ND	ND	104 µg/L	
Cadmium		✓	1	200.8	0.2	ND	ND	10.2 µg/L	
Chromium III		✓	1	107	1	ND	ND	323 µg/L	
Chromium VI	✓		1	7196A	10	ND	ND	323 µg/L	
Copper		✓	1	200.8	1	ND	ND	242 µg/L	
Iron		✓	1	200.7	50	4990	4990	5,000 µg/L	
Lead		✓	1	200.8	1	ND	ND	160 µg/L	
Mercury		✓	1	245.1	0.2	ND	ND	0.739 µg/L	
Nickel		✓	1	200.8	2	ND	ND	1,450 µg/L	
Selenium		✓	1	200.8	5	ND	ND	235.8 µg/L	
Silver		✓	1	200.8	0.4	ND	ND	35.1 µg/L	
Zinc		✓	1	200.8	10	ND	ND	420 µg/L	
Cyanide	✓		1	4500CN-	5	ND	ND	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX		✓	4	8260C	NA	ND	ND	100 µg/L	---
Benzene		✓	4	8260C	0.5	ND	ND	5.0 µg/L	---
1,4 Dioxane	✓		4	8260C,	3.	ND	ND	200 µg/L	---
Acetone		✓	4	8260C	5	ND	ND	7.97 mg/L	---
Phenol		✓	4	8270	5	ND	ND	1,080 µg/L	

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		✔	4	8260C	1	ND	ND	4.4 µg/L	
1,2 Dichlorobenzene	✔		4	8260C	1	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	✔		4	8260C	1	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	✔		4	8260C	1	ND	ND	5.0 µg/L	---
Total dichlorobenzene	✔		4	8260C	1	ND	ND	763 µg/L in NH	---
1,1 Dichloroethane		✔	4	8260C	1	ND	ND	70 µg/L	---
1,2 Dichloroethane	✔		4	8260C	1	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	✔		4	8260C	1	ND	ND	3.2 µg/L	---
Ethylene Dibromide	✔		4	8260C	2	ND	ND	0.05 µg/L	---
Methylene Chloride	✔		4	8260C	2	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane		✔	4	8260C	1	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	✔		4	8260C	1	ND	ND	5.0 µg/L	---
Trichloroethylene		✔	4	8260C	1	ND	ND	5.0 µg/L	---
Tetrachloroethylene		✔	4	8260C	1	ND	ND	5.0 µg/L	
cis-1,2 Dichloroethylene		✔	4	8260C	1	ND	ND	70 µg/L	---
Vinyl Chloride		✔	4	8260C	1	ND	ND	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		2	8270D	5	ND	ND	190 µg/L	
Diethylhexyl phthalate	✔		2	8270D	3	ND	ND	101 µg/L	
Total Group I PAHs		✔	2	8270DSII	0.1	ND	ND	1.0 µg/L	---
Benzo(a)anthracene		✔	2	8270DSII	0.1	ND	ND	As Total PAHs	
Benzo(a)pyrene		✔	2	8270DSII	0.1	ND	ND		
Benzo(b)fluoranthene		✔	2	8270DSII	0.1	ND	ND		
Benzo(k)fluoranthene		✔	2	8270DSII	0.1	ND	ND		
Chrysene		✔	2	8270DSII	0.1	ND	ND		
Dibenzo(a,h)anthracene		✔	2	8270DSII	0.1	ND	ND		
Indeno(1,2,3-cd)pyrene		✔	2	8270DSII	0.1	ND	ND		

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	8270DSIM	NA	5.93	4.94	100 µg/L	---
Naphthalene		✔	2	8270DSI	0.1	0.48	0.305	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs		✔	1	608	NA	ND	ND	0.000064 µg/L	---
Pentachlorophenol	✔		2	8270D-SI	0.8	ND	ND	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✔	1	1664A	5.2	ND	ND	5.0 mg/L	---
Ethanol	✔		0	NA	NA	NA	ND	Report mg/L	---
Methyl-tert-Butyl Ether	✔		2	8260C	2	ND	ND	70 µg/L	
tert-Butyl Alcohol	✔		1	8260C	10	ND	ND	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		2	8260C	2	ND	ND	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:									
Hardness		✔	1	2340B	660	459000	459000		
1-methylnaphthalene		✔	1	8270DSIM	0.1	0.25	0.25		
2-methylnaphthalene		✔	2	8270DSIM	0.1	0.26	0.18		
trichloromethane		✔	2	8260C	0.75	ND	ND		
2,4-dimethylphenol		✔	2	8270D	5	ND	ND		
2-methylphenol		✔	2	8270D	5	ND	ND		
3-methylphenol		✔	2	8270D	5	ND	ND		
acetophenone		✔	1	8270D	5	ND	ND		
1,3,5-trimethylbenzene		✔	2	8260C	2.5	ND	ND		
barium		✔	0	NOT TESTED IN GW		ND	ND		
beryllium		✔	0	NOT TESTED IN GW		ND	ND		
vanadium		✔	0	NOT TESTED IN GW		ND	ND		
bis(2-ethylhexyl)phthalate		✔	0	8270D	3	ND	ND		

Other (continued):

Parameter	Known or believed absent	Known or believed present	# of samples	Test Method (#)	Detection limit (ug/L)	Daily maximum (ug/L)	Daily average (ug/L)
Butyl benzylphthalate		X	2	8270D	5	ND	ND
Dibenzofuran		X	2	8270D	2	ND	ND
1,2,4-Trimethylbenzene		X	2	8260C	2.5	ND	ND
2-Butanone (methyl ethyl ketone)		X	2	8260C	5	ND	ND
2-Phenylbutane (sec-Butylbenzene)		X	2	8260C	2	ND	ND
Carbon disulfide		X	2	8260C	5	ND	ND
Cymene (p-Isopropyltoluene)		X	2	8260C	2	ND	ND
Ethylbenzene		X	2	8260C	1	ND	ND
Isopropylbenzene (Cumene)		X	2	8260C	2	ND	ND
n-Butylbenzene		X	2	8260C	2	ND	ND
n-Propylbenzene		X	2	8260C	2	ND	ND
Toluene		X	2	8260C	1	ND	ND
trans-1,2-Dichloroethene		X	1	8260C	1	ND	ND
Xylene (total)		X	2	8260C	1	ND	ND

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:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
See attached Figure 4.

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:

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: Bag filters Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	150
Provide the proposed maximum effluent flow in gpm.	150
Provide the average effluent flow in gpm.	50
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

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:

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

Not Applicable

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

Refer to Appendix E of "Temporary Construction Dewatering, 50 Rogers Street, Cambridge, Massachusetts" by Haley & Aldrich, Inc.

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

Refer to Appendix D of "Temporary Construction Dewatering, 50 Rogers Street, Cambridge, Massachusetts" by Haley & Aldrich, Inc.

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.

See attached letter.

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

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

J. Certification requirement

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

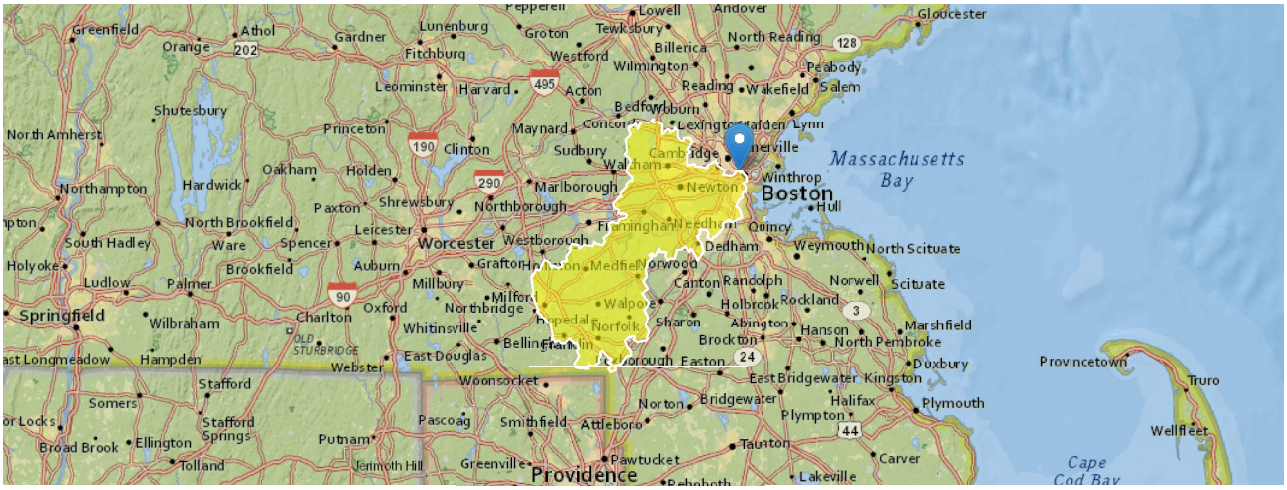
BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented upon initiation of discharge	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ☐ No ☐ NA
Notification provided to the municipality in which 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: Justin Pallal	Date: 6/28/18
Print Name and Title: Consigli Construction Company	

APPENDIX B

Dilution Factor and Effluent Limit Calculations

StreamStats Report

Region ID: MA
Workspace ID: MA20180328174448677000
Clicked Point (Latitude, Longitude): 42.36454, -71.07405
Time: 2018-03-28 13:45:03 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	308	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.334	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.25	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	308	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.334	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.25	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	57.4	ft^3/s
7 Day 10 Year Low Flow	29.2	ft^3/s

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/)

HALEY & ALDRICH, INC.		**CALCULATIONS**	FILE NO.	34250-844
			SHEET	1 of 1
CLIENT	ARE-MA Region No. 62, LLC		DATE	29-Mar-18
PROJECT	50 Rogers Street, Cambridge, MA		COMPUTED BY	KGD
SUBJECT	DILUTION FACTOR CALCULATIONS			

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 29.2 cfs (from StreamStats 4.0)
2. A conversion of 7.48 is used to convert cubic feet to gallons
3. A discharge flowrate of 150 gpm is assumed

CALCULATIONS:

7Q10 Low Flow Value (Q_S)

$$Q_S = \frac{29.2\ ft^3}{sec} \times \frac{7.48\ gallons}{ft^3} \times \frac{86{,}400\ sec}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

Q_S = 18.87 MGD

Discharge Flowrate (Q_D)

$$Q_D = \frac{150\ gallons}{min} \times \frac{1{,}440\ min}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

Q_D = 0.216 MGD

Dilution Factor (DF)

$$DF = \frac{Q_S + Q_D}{QD} = \frac{18.87\ MGD + 0.216\ MGD}{0.216\ MGD} = 88.36$$

CONCLUSION The dilution factor for this project is calculated to be 88.36 based on the provided 7Q10 low flow value and discharge flowrate.

Daylor, Grace

From: Vakalopoulos, Catherine (DEP) <Catherine.Vakalopoulos@MassMail.State.MA.US>
Sent: Friday, April 20, 2018 11:00 AM
To: Daylor, Grace; Ruan, Xiaodan (DEP)
Subject: RE: NPDES RGP Application - 50 Rogers Street - 7Q10 and Dilution Factor Confirmation

Hi Grace,
Your dilution factor calculation of 88.36 using the 150 gpm for a discharge through CSO CAM017 to the Charles River is correct. To assist you with the NOI, this part of the Charles River has a segment ID of MA72-38, is classified as Class B, is not an Outstanding Resource Water, and has two TMDLs (phosphorus and pathogens). To see the specific impairments, go to: https://www.mass.gov/files/documents/2017/08/zu/16ilwplist.pdf and search for MA72-38. For the purposes of completing the NOI, you should be all set from MassDEP but feel free to contact me if you have any questions.
Cathy

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
1 Winter St., Boston, MA 02108, 617-348-4026

From: Daylor, Grace [mailto:GDaylor@haleyaldrich.com]
Sent: Thursday, April 19, 2018 9:25 AM
To: Vakalopoulos, Catherine (DEP); Ruan, Xiaodan (DEP)
Subject: NPDES RGP Application - 50 Rogers Street - 7Q10 and Dilution Factor Confirmation

Good morning Cathy, Xiaodan.

As required in Appendix V of the 2017 RGP, I have attached to this email our StreamStats report detailing the 7 Day 10 Year (7Q10) low flow value for our project (listed below) along with the dilution factor calculations for your review and confirmation.

Project:
50 Rogers Street
Cambridge, Massachusetts

7 Day 10 Year Low Flow value (from attached StreamStats Report) = 29.2 cfs, 18.87 MGD

Dilution Factor (from attached calculations) = 88.36

We are assuming a flow of 50 gpm with peak flows up to 150 gpm. The discharge route for this project travels east on Rogers Street and then south on First Street, east on Binney Street and then discharges to the Charles River via outfall CAM-017.

Can you please confirm if these values are appropriate for use for our project?

Thanks,
Grace

Grace Daylor, EIT

Engineer

Haley & Aldrich, Inc.
465 Medford Street | Suite 2200
Boston, Massachusetts 02129

T: 617.886.7433
C: 804.514.5255
www.haleyaldrich.com

Enter number values in green boxes below

Enter values in the units specified

↓

18.87	Q_R = Enter upstream flow in **MGD**
0.216	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

88.36

Enter values in the units specified

↓

459	C_d = Enter influent hardness in **mg/L** $CaCO_3$
82.3	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

7.51	pH in **Standard Units**
9	Temperature in **°C**
0	Ammonia in **mg/L**
82.3	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**
1.93	Copper in **µg/L**
334	Iron in **µg/L**
1.17	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**
1.44	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**
4990	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

Dilution Factor	88.4					
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	972	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	56551	µg/L		
Arsenic	**104**	µg/L	884	µg/L		
Cadmium	**10.2**	µg/L	21.4880	µg/L		
Chromium III	**323**	µg/L	6766.2	µg/L		
Chromium VI	**323**	µg/L	1010.4	µg/L		
Copper	**242**	µg/L	560.1	µg/L		
Iron	**5000**	µg/L	59183	µg/L		
Lead	**160**	µg/L	131.74	µg/L		
Mercury	**0.739**	µg/L	80.04	µg/L		
Nickel	**1450**	µg/L	4079.5	µg/L		
Selenium	**235.8**	µg/L	441.8	µg/L		
Silver	**35.1**	µg/L	260.9	µg/L		
Zinc	**420**	µg/L	9368.7	µg/L		
Cyanide	**178**	mg/L	459.5	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	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	26508	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	141.4	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	291.6	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	194.4	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.3358	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.3358	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	1767	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

APPENDIX C

Copy of City of Cambridge Dewatering Permit Application

PERMIT TO DEWATER

Location: 50 Rogers Street

Owner: ARE-MA Region No. 62, LLC

Contractor: Consigli Construction, Co., Inc.

Temporary ☑

Permanent ☐

The property owner, ARE-MA Region No. 62, LLC agrees to hold harmless and indemnify the City of Cambridge for any liability on the part of the City directly or indirectly arising out of the dewatering operation.

The issuance of this permit is based in part in the submission packet of the applicant with documentation as follows:

Haley & Aldrich, Inc. report "Temporary Construction Dewatering, 50 Rogers Street, Cambridge, Massachusetts"

In addition, the application has been reviewed by the City under third party agreement as documented in the following reports:

All activities conducted in conjunction with the issuance of this permit must be in accordance with the provisions of the aforementioned reports. Any deviations in conditions must be reported to and approved by the Commissioner of Public Works.

This permit is in addition to any other street permit issued by the Department in connection with any street excavation or obstruction; and all conditions as specified in the Discharge Permit for Dewatering.

For the entire period of time the groundwater is being discharged to a storm drain, the property owner shall provide copies of each Discharge Monitoring Report Form submitted to the EPA, pursuant to the owner's discharge permit.

If in the future the EPA requires the City of Cambridge to bring existing stormwater drainage into compliance with EPA quality standards, as a condition to the continuation of discharge of that stormwater (also including groundwater) into an EPA regulated system into which the ARE-MA Region No. 62, LLC (property owner) drains, the owner will agree to maintain its water discharge with such EPA water quality standards.

The property owner and contractor shall at all times meet the conditions specified in the requisite legal agreement/affidavits.

All groundwater pumped from the work shall be disposed of without damage to pavements, other surfaces or property.

Where material or debris has washed or flowed into or has been placed in existing gutters, drains, pipes or structures, such material or debris shall be entirely removed and satisfactorily disposed of by the

Contractor during the progress of work as directed by the Public Works Department.

Any flooding or damage of property and possessions caused by siltation of existing gutters, pipes or structures shall be the responsibility of the Contractor.

Provisions shall be made to insure that no material, water or solid, will freeze on any pavement or in any location which will cause inconvenience or hazard to the general public.

Upon completion of the work, existing gutters, drains, pipes and structures shall be (bucket) cleaned and material disposed of satisfactorily prior to release by the Public Works Department.

Any permit issued by the City of Cambridge shall be revoked upon transfer of any ownership interest unless and until subsequent owner(s) or parties of interest agree to the foregoing terms.

This permit shall remain in effect for one year and shall be renewable thereafter at the agreement of the parties.

The following special conditions as set forth below are part of the permit.

not applicable

City Manager	Property Manager: Corporate Entity President, General Partner or Trustee Trustee with Instrument of Authority
Date	Date
City Solicitor	Contractor
Date	Date
Commissioner of Public	Contractor
Date	Date

CC: Engineering
Supervisor of Sewer Maintenance and Engineering
Superintendent of Streets
Commissioner of Inspectional Services

APPENDIX D

Contractor's Dewatering Submittal

Project: 1759 - ARE - 50 Rogers Street
50 Rogers Street
Cambridge, Massachusetts 01242

Submittal #312319-001.1
312319 - Construction Dewatering

SD: Dewatering Plan

APPROVERS:	Joe Nault **(Consigli Construction Co., Inc.)**	**CREATED BY:**	
RESPONSIBLE CONTRACTOR:	W.L. French Excavating Corp. Nick Engel **(W.L. French Excavating Corp.)**	**STATUS:**	Pending
TYPE:	Material Delivery	**SPEC SECTION:**	312319 - Construction Dewatering

COPIES TO:
Rebecca Higgins **(Haley & Aldrich)** , Jeffrey Costa **(Consigli Construction Co., Inc.)** , John Welz **(Consigli Construction Co., Inc.)** , Justin Pollard **(Consigli Construction Co., Inc.)** , Frank Valdes **(DiMella Shaffer)** , Ryan Dunn **(DiMella Shaffer)** , Joe Nault **(Consigli Construction Co., Inc.)** , Peter DeLuca **(Citywide Contracting)**

DESCRIPTION:

ATTACHMENTS:

ARCHITECT'S STAMP

CONTRACTOR'S STAMP

Consigli Construction Co., Inc.

X	Approved for A/E Review		Revise & Resubmit
	Approved as Noted for A/E Review		Rejected

Spec. Section: 312319	Submittal No.: 312319-001
Date: 6/20/2018	By: Joe Nault

If so marked, approval is given for design only. It does not relieve the subcontractor from complying with the requirements of the contract, contract drawings and specifications. The subcontractor shall be responsible for all dimensions, quantities, schedules and field conditions.

SUBMITTAL WORKFLOW

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS	COMMENTS
1	Joe Nault	Approver		6/20/2018	6/20/2018	Approved		

BY **DATE** **COPIES TO**

W. L. FRENCH EXCAVATING CORPORATION
COMMERCIAL SITE DEVELOPMENT • CONTRACT TRUCKING • ENVIRONMENTAL MANAGEMENT

SUBMITTAL COVER SHEET

Date:	*6/20/18*
General Contractor:	Consigli Construction 72 Sumner Street Milford, MA 01757
Project:	50 Rogers Street Cambridge, MA
Submittal Description:	*Dewatering Plan*
Spec Section(s):	*312319 Construction Dewatering*
Subsection(s):	
Previous Submittal No.	*001*
Submittal No.	*001A*
Supplier or Subcontractor:	W.L. French Excavating Corp. Company / LRT
Submitted BY:	NVE
Comments:	*Attached for review and approval is the resubmittal for the construction dewatering plan for 50 Rogers Street.*

DEWATERING PLAN

50 Rogers Street

Cambridge, Massachusetts

Prepared by:

Prepared for:

Date: June 19, 2018

Contents

Section Page

Figures

Attachments

1. Introduction

This Dewatering Plan has been prepared by Lockwood Remediation Technologies, LLC on behalf of W.L. French Excavating Corporation (French) for the excavation project at 50 Rogers Street, Cambridge, Massachusetts. This Plan relies on available data contained in the *Subsurface Investigations and Geotechnical Design Recommendations* prepared by Haley & Aldrich, Inc. (H&A) dated February 19, 2018, the *Soil Precharacterization Report* prepared by H&A dated March 9, 2018, drawings specifications and available information provided by French. The Plan also relies on experience in dewatering under similar conditions and in similar soils. This was used to generate a finite difference dewatering model using Visual Modflow version 2012.1.

1.1 Purpose and Scope

The purpose of this Plan is to provide French with an overview of the anticipated dewatering effort, and additional information regarding the methods to be used; the size, type, and location of pumps; discharge locations; manufacturer's data for mechanical equipment; and anticipated dewatering/pumping rates.

1.2 Key Assumptions

To estimate pumping rates at the site the following assumptions were used in this study:

1. The new development site now known as "50 Rogers Street" consists of two parcels of land at 50 Rogers Street and 161 First Street that will be consolidated and subdivided into two new Lots. Existing surface grade is approximately El. +21'.
2. The proposed construction consists of a 6-story residential development with two levels of below-grade parking. The lowest level floor slab is planned at El. -1.9' and the bottom of excavation for footings is approximately El. -7'. In addition, a sanitary holding tank will be installed at approximately El. 0' with a tie-in point for this structure on Binney Street at El. +2.5'.
3. Support of excavation (SOE) will consist of steel sheeting surrounding the proposed building. The SOE for the sanitary tank and associated sewer line tie in location on Binney Street will be trench boxes or open cut.
4. Subsurface material at the site consists of fill material which is comprised of a gray to brown silty sand with gravel. Cohesive fill consisting of sandy clay is also present in some areas of the site. Beneath the fill material is an organic deposit layer underlain by an estuarine/marine sand deposit layer, comprised of brown to olive gray poorly graded fine to medium sand. Beneath the estuarine/marine sand deposit layer is a marine clay which is comprised of lean clay and frequent fine sand partings in some locations.

5. Based upon groundwater monitoring conducted in observations wells, the depth to groundwater ranged from approximately 9.3 to 16.6 ft below ground surface (bgs), corresponding to approximately El. +7.3' to El. +11.7'.
6. Dewatering will be conducted via a sump dewatering system. Sumps will be installed by others.
7. The influent flow rate has been estimated at 150 gallons per minute (gpm); however, this is only an estimate and actual site conditions may vary.
8. According to the *Soil Precharacterization Report* by H&A dated March 9, 2018, the site was listed as a Disposal Site by the Massachusetts Department of Environmental Protection (MassDEP) and subsequently assigned a Release Tracking Number. A Class B-2 Response Action Outcome (RAO) Statement with an Activity and Use Limitation (AUL) was submitted to the MassDEP on January 22, 2007 indicating no further response actions were required. In addition, a Class B-1 RAO Statement was submitted to the MassDEP in April 2013, also indicating that no further response actions were necessary.
9. Primary contaminants of concern in the waste stream are total suspended solids (TSS). It is assumed that any metals concentrations will be addressed through settling and bag filtration. If additional analytes are encountered, modification to the treatment system may be required which could affect the system budget.
10. Treated water will be discharged under a National Pollutant Discharge Elimination System (NPDES) and a City of Cambridge permit obtained by others.

1.3 Description of Dewatering Model and Model Assumptions

A finite difference model using Visual Modflow version 2012.1 was created for the dewatering estimate. The model consists of two layers. One for the fill, organics and marine sand deposits and a second layer for the marine clay. For purposes of estimation of pumping rates at the site, the following assumptions were used in this study:

1. The model dimensions are 284,568 square feet centering on the deepest portion of the excavation. The model area was divided into a 60 by 40 nodal array.
2. The model was run under steady-state conditions. The actual time required to achieve steady-state conditions on a dewatering job varies but for this site it may take several days depending on how fast the water in storage is removed from the overburden and if any significant rainfall occurs.
3. The estimated recharge based on annual averages and degree of surface permeability was input as 2.0 inches/year.
4. The model has two layers with Layer 1 simulating the fill, organics and marine sand layer with an estimated thickness of 23.5 feet to El -2.5'. Layer 2 simulates the marine clay and was assigned an arbitrary thickness of 37.5 feet to El. -40'. Actual elevations of

stratigraphic sequences were incorporated into the model based on the geotechnical information provided to LRT.

5. The hydraulic conductivity (permeability) of Layer 1 and Layer 2 is estimated at $1x10^{-2}$ cm/s and $1x10^{-6}$ cm/s respectively. This site specific hydraulic conductivity is estimated based on geotechnical classification of the stratification at the site by others and using publishing values for those classification (i.e. Fetter, 1988).
6. The effective porosity of the subsurface was assumed to be 0.30.
7. Any dewatering sumps installed will be completed a minimum of 5' below the bottom of the excavation.
8. The steel sheeting was modeled at 36 feet bgs (El. -15'). The leakage of the steel sheeting was estimated at $1x10^{-6}$ cm/s.

2. Anticipated Conditions

2.1 Subsurface Soils and Groundwater

Available data from subsurface investigations indicate subsurface material at the site consists of fill which is comprised of a gray to brown silty sand with gravel. Cohesive fill consisting of sandy clay is also present in some areas of the site. The fill contains varying amounts of cinders and a range of miscellaneous debris (wood, brick, concrete, glass, etc.); substantial quantities of ash and cinders were also encountered at several locations. Beneath the fill material is an organic deposit layer which is comprised of brown to black organic silty sand to sandy organic soil with and varying amounts of peat and trace shells underlain by an estuarine/marine sand deposit layer which is comprised of brown to olive gray poorly graded fine to medium sand. Beneath the estuarine/marine sand deposit layer is a marine clay which is comprised of stiff gray to olive gray lean clay with frequent fine sand seams in some locations.

For detailed information regarding depth and elevations of the various soil strata encountered at each of the boring locations, refer to the *Subsurface Investigations and Geotechnical Design Recommendations* prepared by Haley & Aldrich, Inc. (H&A) dated February 19, 2018.

Groundwater measured at the site ranges between 9.3 to 16.6 ft below ground surface (bgs), corresponding to approximately El. +7.3’ to El. +11.7’. A design groundwater level of El. +12’ was used in this submittal. Area groundwater levels are influenced by numerous other factors including below-grade structures, precipitation, surface runoff, local construction activity, pumping of dewatering systems, leakage from utilities, and seasonal variations. Water levels should be anticipated to fluctuate and may differ during construction from those reported herein.

2.2 Excavation Dimensions and Depths

There are three separate proposed excavation areas that will require dewatering services: Main Building, Sanitary Tank, and the Sanitary Line Tie-In location. LRT has assumed that the dewatering target is 2’ below the bottom of each excavation.

- Main Building: dimensions of the excavation area are approximately 150 feet long by 190 feet wide extending approximately 28 feet below grade to approximately El. -7’.

- Sanitary Tank: dimensions of the sanitary tank are approximately 10 feet long by 14 feet wide extending approximately 21 feet below grade to approximately El. +0’.

- Sanitary Line Tie-In: dimensions of the excavation area are approximately 20 feet long by 10 feet wide extending approximately El. +2.5'.

2.3 Pumping Rates

As mentioned previously, for purposes of estimation of dewatering, a dewatering model was completed in Modflow for three separate excavation areas: Main Building, Sanitary Tank and the Sanitary Line Tie-In Location. One model was calibrated to observed non-pumping conditions. The additional models were completed to simulate pumping conditions. The models were based on site specific information that included geology reported in soil borings completed by H&A and the proposed excavation plan. Static groundwater elevations simulated in the model were assumed to be at or near El. +12' which is the highest water level observed and therefore should be considered a conservative estimate.

Main Building

The bottom of the deepest portion of the excavation is approximately El. -7' and water levels are to be maintained 2' below the excavation depth. Based on the results of the modeling, the combined steady-state dewatering flow rate is expected to be approximately 100-150 gpm for the Main Building. This estimated flow rate lowers ground water elevations within the footprint of the excavation to less than El. -9' or approximately at least a minimum of 2' below the bottom of the excavation which maintains a dry excavation during the project.

Sanitary Tank

The bottom of the deepest portion of the excavation is approximately El. 0' and water levels are to be maintained 2' below the excavation depth. Based on the results of the modeling, the combined steady-state dewatering flow rate is expected to be approximately 50-100 gpm for the Sanitary Tank. This estimated flow rate lowers ground water elevations within the footprint of the excavation to less than El. -2' or approximately at least a minimum of 2' below the bottom of the excavation which maintains a dry excavation during the project.

Sanitary Line Tie-In Location

The bottom of the deepest portion of the excavation is approximately El. +2.5' and water levels are to be maintained 2' below the excavation depth. Based on the results of the modeling, the combined steady-state dewatering flow rate is expected to be approximately 50-100 gpm for the Sanitary Line Tie-In Location. This estimated flow rate lowers ground water elevations within the footprint of the excavation to less than El. +0.5' or approximately at least a minimum of 2' below the bottom of the excavation which maintains a dry excavation during the project.

Actual dewatering flow rates will mostly depend on site conditions and on the amount of precipitation that occurs at the time of active dewatering. The output graphs showing the model results are included in Attachment A.

3. Dewatering Methods

3.1 General

French shall maintain site grades to direct runoff in the excavation to the dewatering sumps. The effective radius of each dewatering sump can be enhanced via gravel placement. In addition, French shall manage the dewatering effluent to minimize the potential for erosion, damage, or contamination of the site.

3.2 Dewatering Sumps

French will install as many sumps as necessary along the perimeter of the excavations, however, for conceptual purposes thirteen (13) sumps are shown on (Figure 2), each with their own submersible pump. The final number and combination of sumps will be determined by French based on the actual conditions encountered in the field. If total influent flow rate of dewatering required exceeds the flow rate calculated in this dewatering plan, additional sumps may be installed.

3.3 Pumps

Pumps are expected to be 3-inch diameter discharge electric submersible pumps.

3.4 Discharge Lines

Discharge lines will run from the pump(s) to a water treatment system. It is anticipated that a combination of PVC pipe, flexible hose, and quick-connect connections will be used for the discharge lines.

3.5 Water Treatment System

French will provide a water treatment system suitable to reduce total suspended solids prior to discharge. This system includes a weir tank, bag filtration and a flow meter/totalizer (refer to Additional treatment may include granulated activated carbon (GAC) and ion exchange, if necessary to meet NPDES discharge standards. Please refer to Figure 4 for a system schematic and Attachment C for individual cut sheets of system components. Calculations regarding the water treatment system are included as Attachment D.

The treatment system is capable of treating water up to 150 gpm and consists of one (1) 18,000-gallon weir tank. From the weir tank, water is pumped via a 3-inch submersible pump to one (1) triple bag filter skid with three (3) single bag filters plumbed in parallel such that two bag filter vessels can operate while the other remains in standby. During a bag filter change-out, two

vessels are opened while the other is closed so that water treatment never needs to be shut down. Each bag filter vessel includes isolation valves, sample ports and pressure gauges on the influent and effluent piping so that it is clear when a bag filter change-out is required. From the bag filter housings, treated water will be monitored with a flow meter/totalizer.

Contingency water treatment components include a two (2) media vessels each containing 3,000 pounds of reactivated liquid phase carbon, followed by one (1) media vessel containing 60 cubic feet of cation exchange resin. Each media vessel is rated for a maximum flow rate of 150 gpm and 75 PSI.

3.6 Flow Metering

Flow metering (instantaneous and total) is recommended on this project. The water treatment system includes a non-resettable flow meter and totalizer. See Attachment C for a cut sheet.

3.7 Pump Tests

Dewatering for this project will be completed using dewatering wellpoints and sump pumps within the excavation. Pump tests are not planned as part of this project.

3.8 Record Keeping

During dewatering, French will maintain results of monitoring and inspection reports dictated by the applicable permit requirements/conditions.

3.9 Dewatering System Layout

The proposed dewatering system layout for this project indicates the anticipated number of sump wells and is presented in Figure 2. As mentioned, the final number, combination, location and configuration of these components will be determined by the actual conditions encountered in the field.

4. Backup Systems and Contingencies

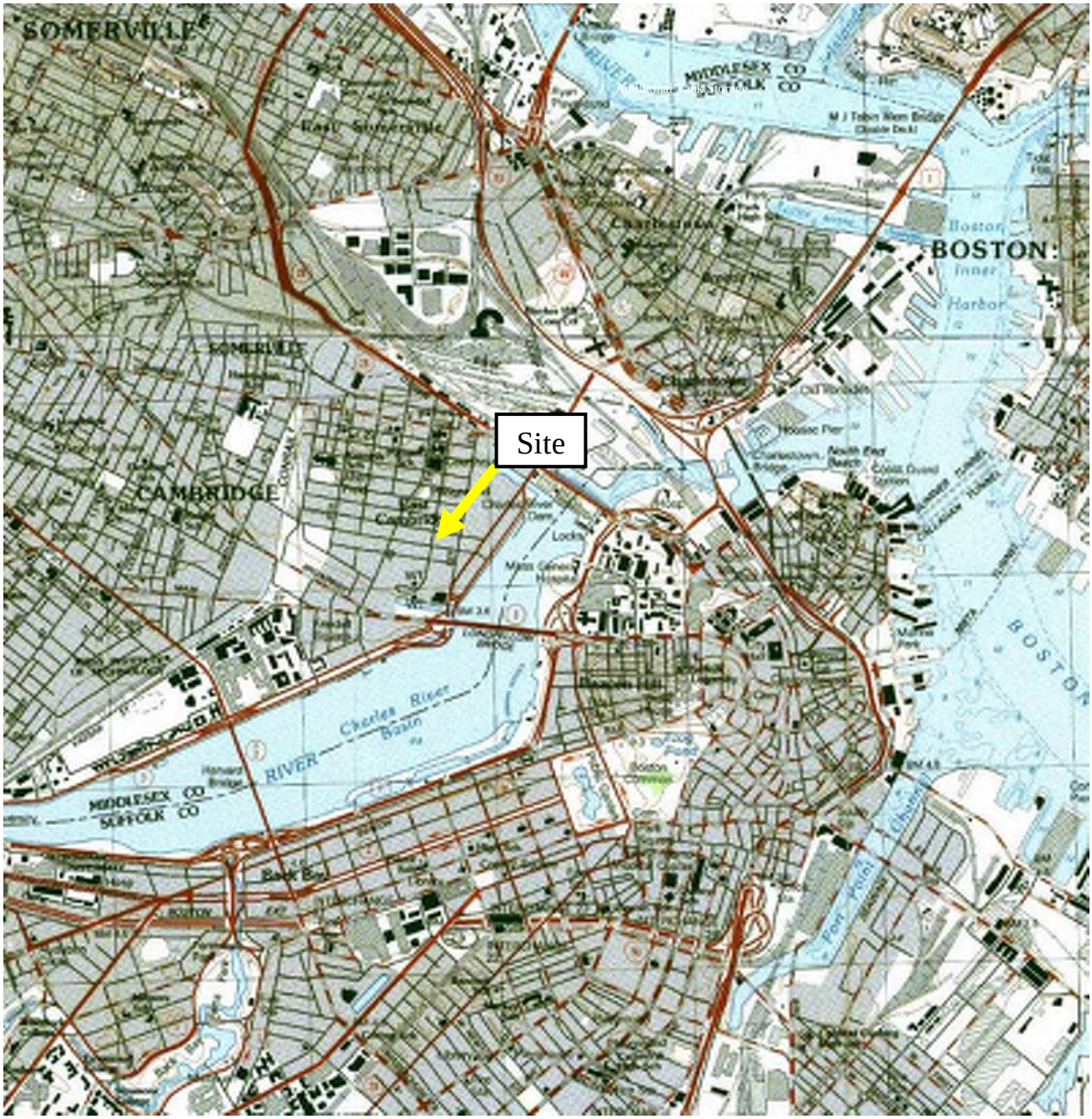
4.1 Backup System

An electrical service will be provided by French for the operation of the dewatering system. Backup power will be provided by emergency power generators that will be staged by French at the site.

4.2 Contingency Plans

In the event of periods of high precipitation, it is recommended that the job cease due to the possibility of the excavation being overwhelmed by water. Formal contingency plans will be developed by French after assessing a particular situation and may include, but would not be limited to; repositioning/installing additional wells and/or pumps; using alternative excavation support measures to reduce flows into the excavation; additional groundwater constituents that exceed discharge criteria; and operating the dewatering systems during work hours only.

Figures



Source: MassGIS Topographic Base Map from the following USGS Quadrangle Map: South Boston - Massachusetts

Notes

1. Figure is not to scale.

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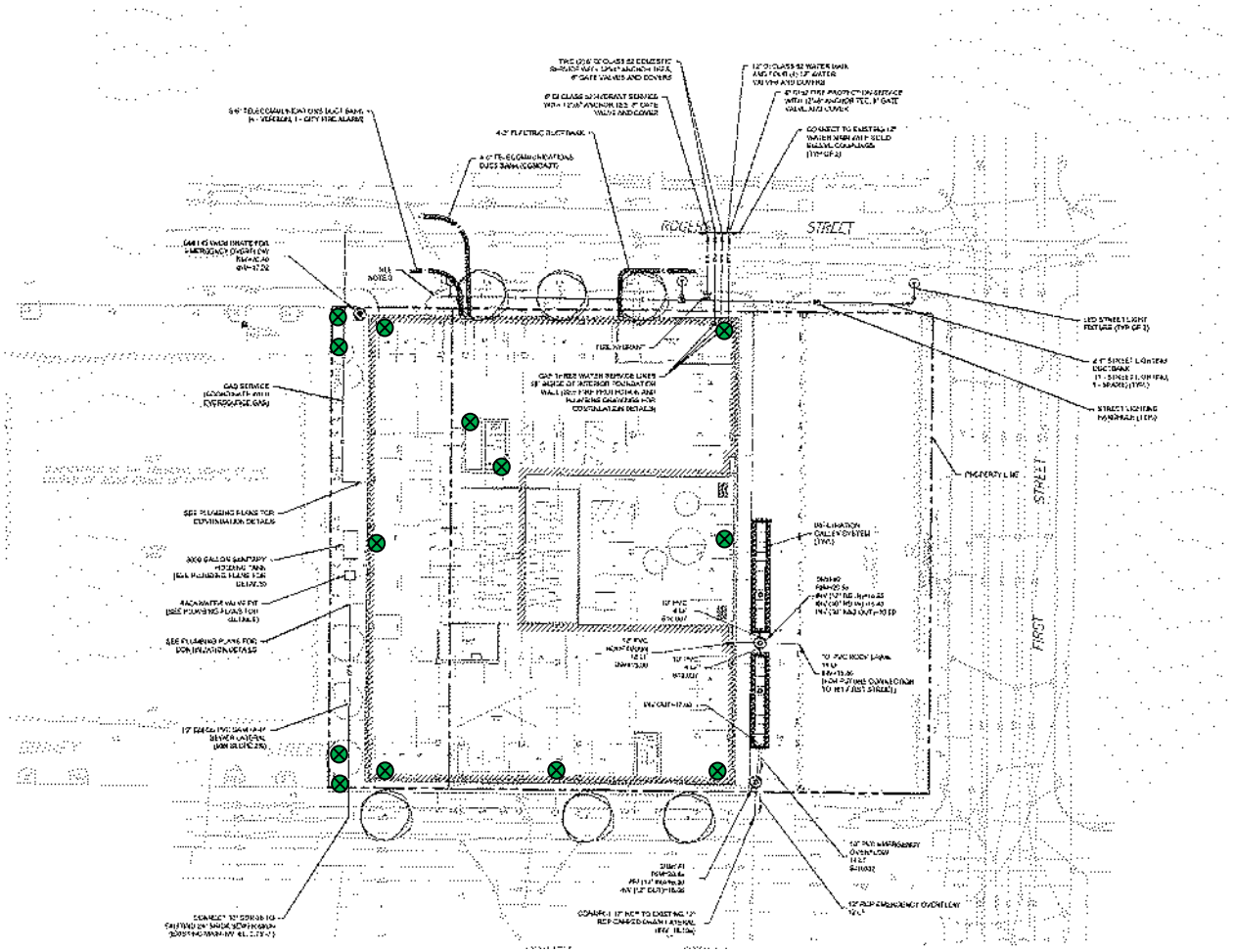
Figure 1 – Locus Plan
50 Rogers Street
Cambridge, Massachusetts



Source: C-5 – Composite Utility Plan – Simella Shaffer, dated March 1, 2018

Notes

1. Figure is not to scale.

Dewatering Sump

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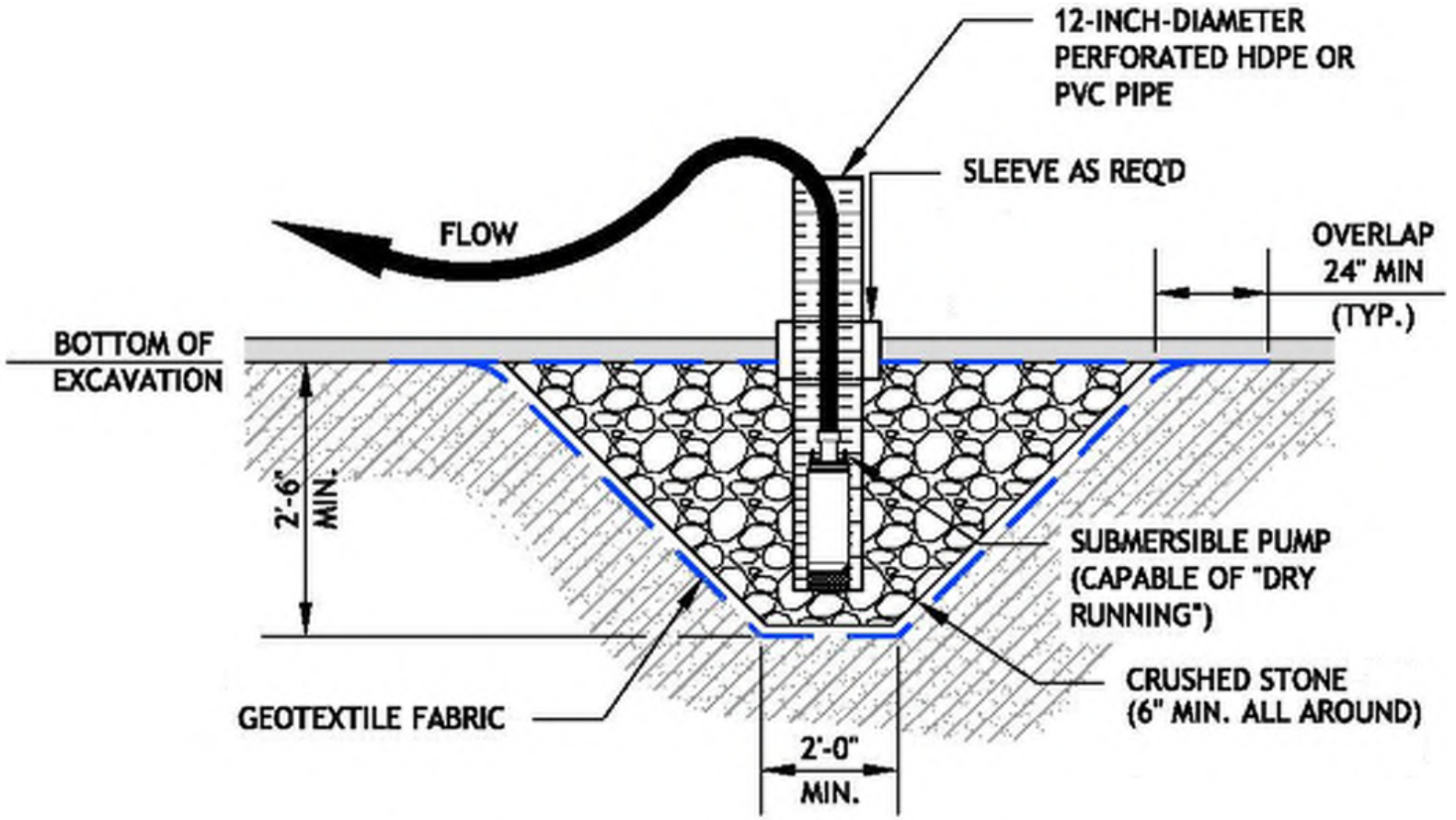
Figure 2 –Dewatering System Layout
50 Rogers Street
Cambridge, Massachusetts



TYPICAL SUMP AND PUMP DETAIL

SCALE: NTS

Notes:

1.) Figure is not to scale.
2.) Sumps should be packed with ¾" stone.

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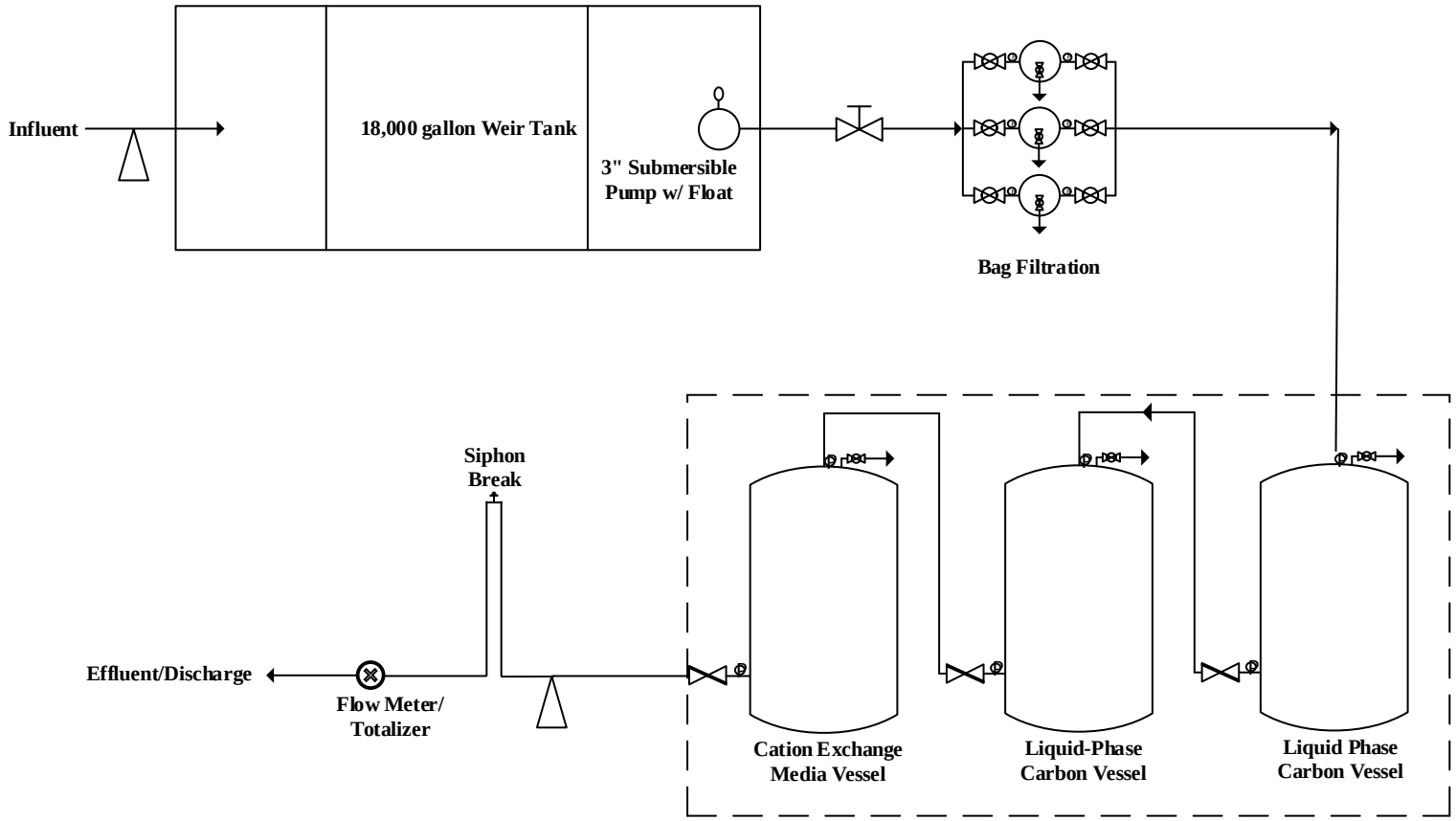
Figure 3 - Dewatering Sump Detail
50 Rogers Street
Cambridge, Massachusetts



Notes:

1.) Figure is not to scale
2.) System rated for 150 GPM

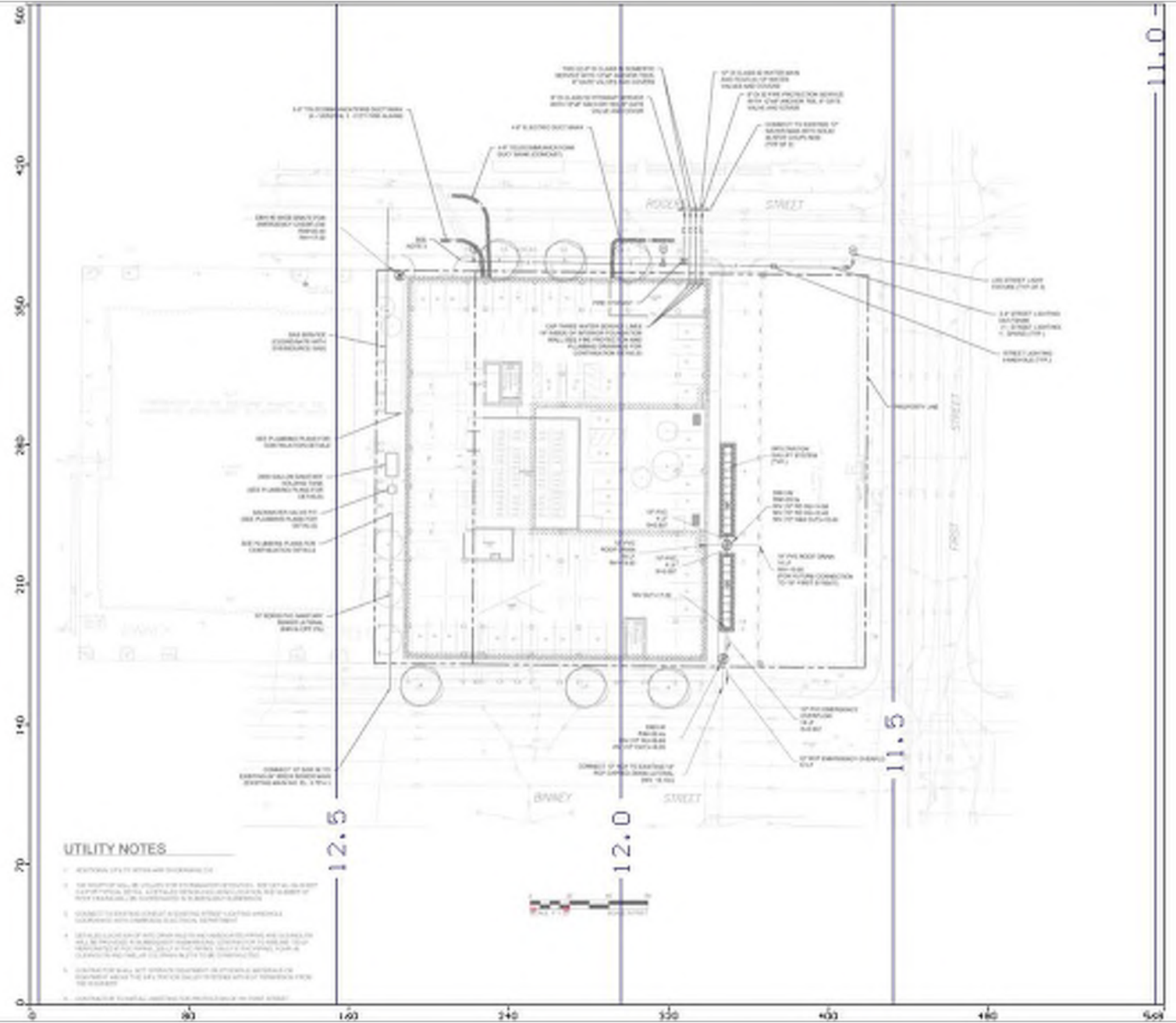
Key:
Piping/Hose
Sample Port
Contingent

	Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453 Office: 774-450-7177	**Figure 4 - Water Treatment System Schematic**	50 Rogers Street Cambridge, Massachusetts	PROJECT No. 2-1674	FIGURE No. 4
	DESIGNED BY: LRT DRAWN BY: K. Gravelle CHECKED BY: DATE:				

Attachment A

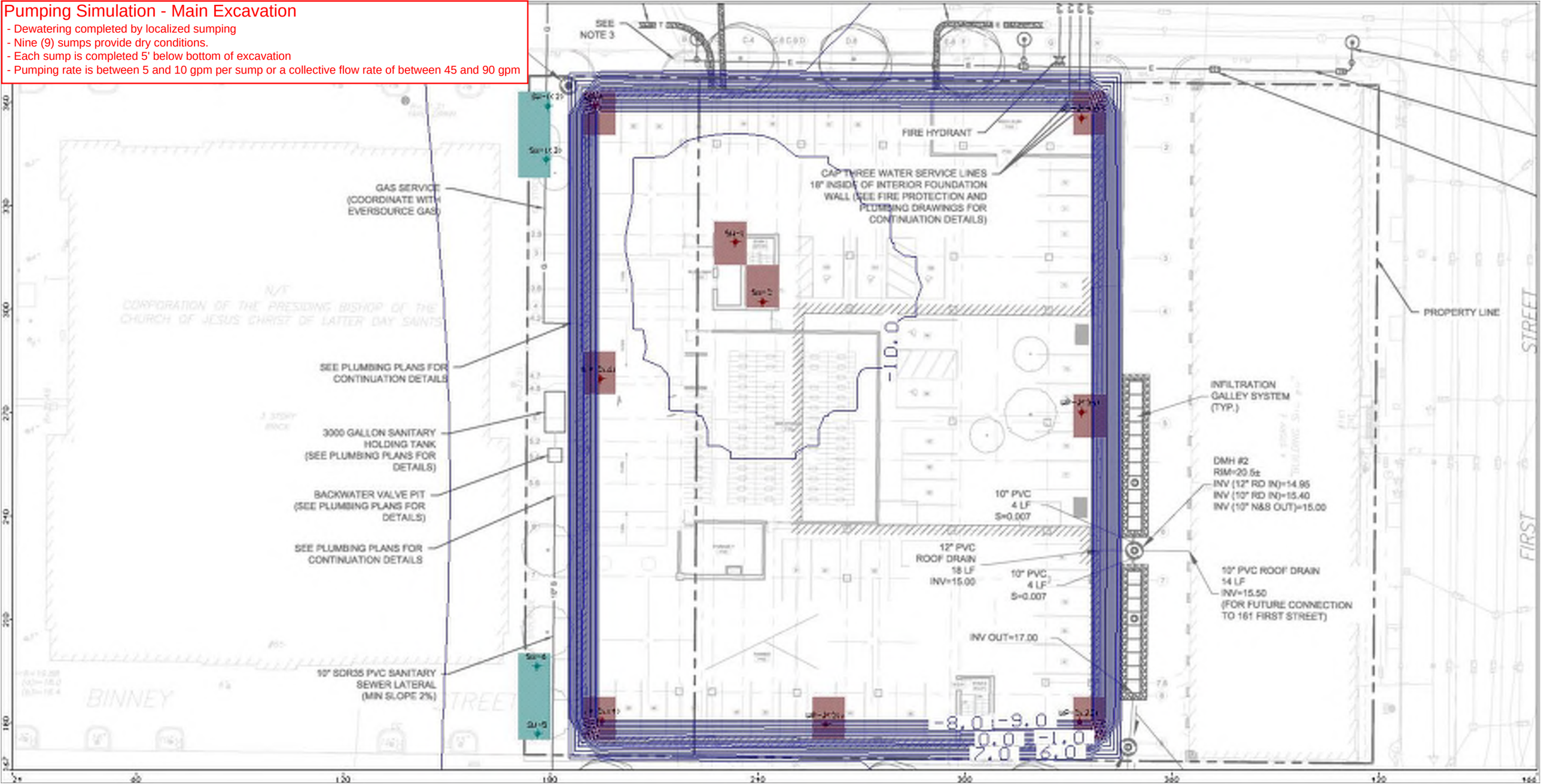
Dewatering Model Outputs

Calibration - Non-Pumping Conditions



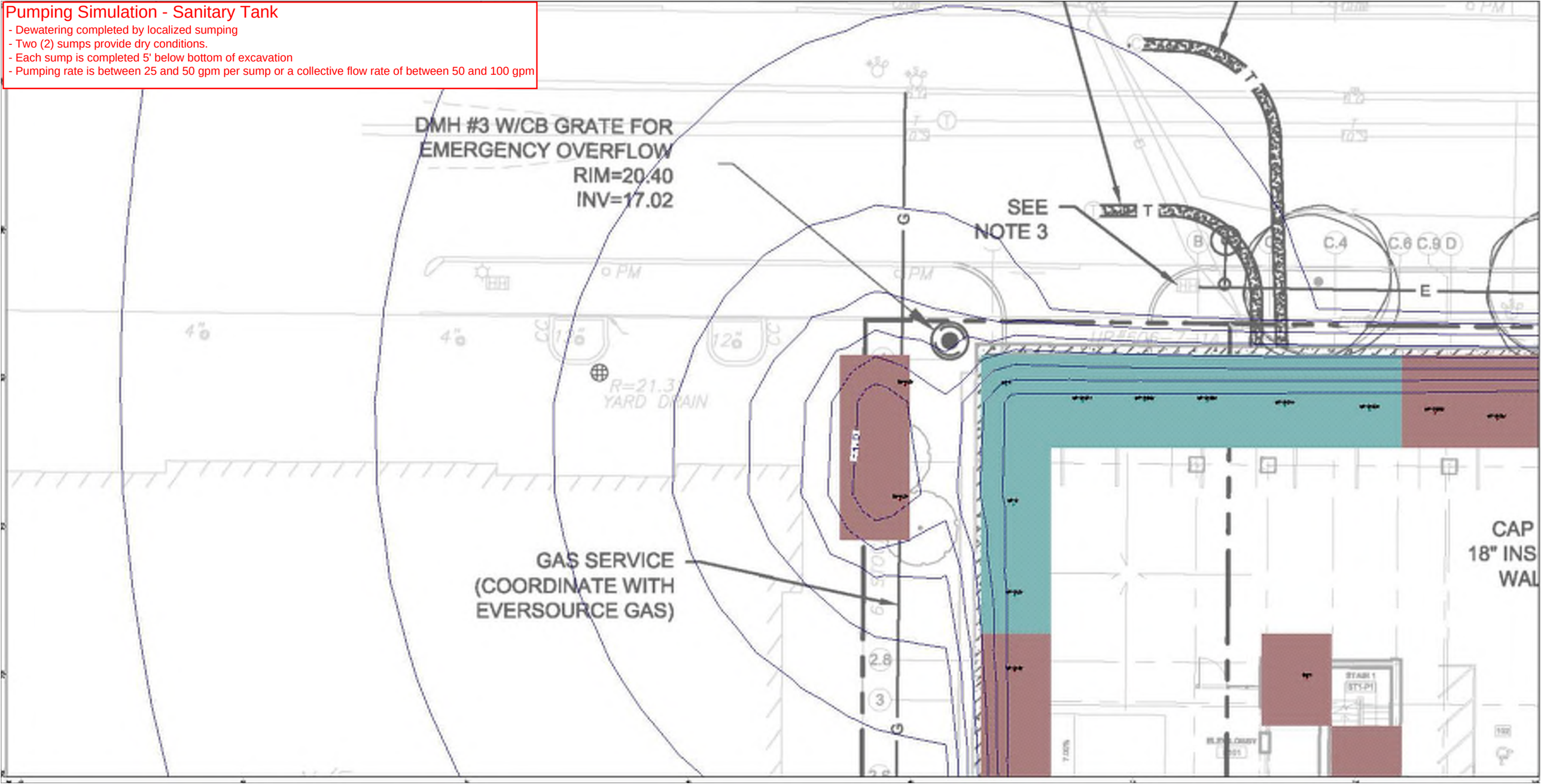
Pumping Simulation - Main Excavation

- Dewatering completed by localized sumping
- Nine (9) sumps provide dry conditions.
- Each sump is completed 5' below bottom of excavation
- Pumping rate is between 5 and 10 gpm per sump or a collective flow rate of between 45 and 90 gpm



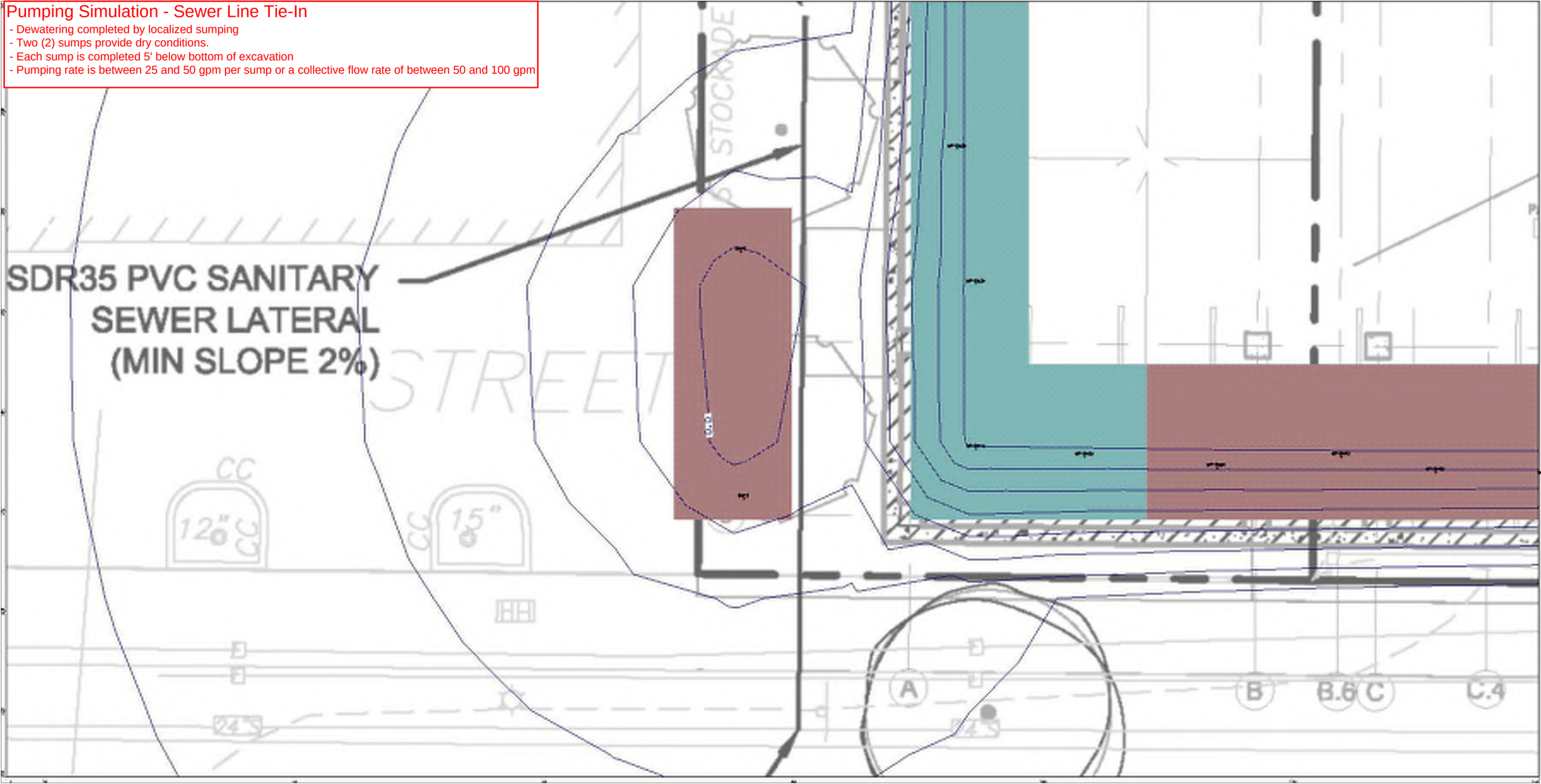
Pumping Simulation - Sanitary Tank

- Dewatering completed by localized sumping
- Two (2) sumps provide dry conditions.
- Each sump is completed 5' below bottom of excavation
- Pumping rate is between 25 and 50 gpm per sump or a collective flow rate of between 50 and 100 gpm



Pumping Simulation - Sewer Line Tie-In

- Dewatering completed by localized sumping
- Two (2) sumps provide dry conditions.
- Each sump is completed 5' below bottom of excavation
- Pumping rate is between 25 and 50 gpm per sump or a collective flow rate of between 50 and 100 gpm



Attachment B

Dewatering System Cut Sheets

Motor Protection

All models provide built-in thermal overload protection that shuts down the pump when operating temperature becomes too high, and automatically restarts once the motor cools and a proper temperature is met.

YELLSUB

33 GPM - 15' HEAD
3/4" GHT and
1 1/4" NPT Discharge

The Yellow Submarine is lightweight, compact and is a great choice for light duty jobs found around the shop or home. One piece polymer pump casing resists corrosion and heat. Features internal overload protection, dual shaft seals, and UL/CUL listings.

ST2038P

2" NPT Discharge
60 GPM - 38' HEAD

Designed for hard industrial pumping applications. Unique strainer permits dewatering levels down to 1/16". Features oil-filled dual shaft seals, aluminum housing, streamline shape, powerful 115V motor, internal thermal protection, and UL/CUL listings.

ST2047

2" NPT Discharge
87 GPM - 47' HEAD

This time tested pump is the contractors choice for tough demanding applications. The engineered design provides superior performance in a compact package. Trusted powerful 115V motor, low maintenance requirements, thermal protection, and UL/CUL listings.

All MQ 115V 1Ø pumps are designed with internal thermal overload protection and do not require extra electrical protection, however, the CB3 Control Box is offered for convenient ON/OFF/AUTO and float switch operations. The CB3 comes with two SW1WOPA float switches.

Quality and Safety

ST Series Single Phase Pumps are in accordance with ISO9001 Quality Management System standard. Also, all Single Phase models carry the Underwriters Laboratories (UL) Listing for compliance with both U.S. or Canadian electrical safety codes.

SS233

2" NPT Discharge
60 GPM - 20' HEAD

This highly portable, lightweight pump is a great choice for flooded rooms, flat roofs, fill tanks, basins, fountains and waterfalls. Features include hardy thermoplastic casing, stainless steel fitting, internal overload protection, full oil lubricated shaft seals, and UL/CUL listings.

ST2037

2" NPT Discharge
73 GPM - 37' HEAD

Popular, and versatile, the ST2037 is a low maintenance pump that is designed for long hard industrial pumping applications. Features include oil-filled dual shaft seals, aluminum housing, streamline shape, powerful 115V motor, internal thermal protection, and provides UL/CUL listings.

ST3020BCUL

3" NPT Discharge
170 GPM - 72' HEAD

Slim design and proven performance, this 2HP 230V pump de-waters surfaces down to ½" and handles fluids up to 140° F. Features include double mechanical oil-filled seals, internal thermal protection, & sealed ball bearing assembly. The pump offers a ductile iron impeller, insulated aluminum casing, 50' power cable with strain relief, assembly, and provides a convenient carrying handle.

The pump model ST3020BCUL provides its own internal thermal overload protection, however, the 230V 1Ø CB6 Control Box is offered for convenient ON/OFF/AUTO and float switch operations. The CB6 comes standard with two SW1WOPA float switches.

Why Choose a Trash Pump?

When applications call for moving heavy debris laden water, the proper choice is the Multiquip Submersible Trash Pump. The pumps are equipped with a 2" discharge port, and are internally engineered to easily handle debris and solids up to one inch in diameter. All models employ a vortex action design that discharges solids away from the unique multi-vane impeller to prevent clogging.

Easy Clean out Base Design

ST2040T

2" NPT Discharge
79 GPM - 40' HEAD

This rugged compact submersible trash pump is ideal for moving debris laden water (MAX solid size 1"). A heavy duty cast iron housing and abrasion resistant impeller withstands tough dewatering applications. The ST2040T features dual shaft seals, powerful 115V motor, internal thermal protection, 25' power cable with strain relief, convenient carry handle, and UL/CUL listings. Pumps fluids up to 140° F.

Easy Clean out Base Design

PX400

2" NPT Discharge
72 GPM - 34' HEAD

The PX400 is a lightweight submersible trash pump in a compact package. It is ideal for moving debris laden water (MAX solid size 1"). An industrial grade cast iron housing and abrasion resistant impeller withstands tough dewatering applications. The corrosion resistant stainless steel casing allows this pump to tackle marine, and selected chemical applications. Major features include abrasion resistant impeller, dual shaft seals, powerful 115V motor, internal overload protection, 19' power cable with strain relief, convenient carry handle, and UL/CUL listings. Pumps fluids up to 140° F.

ST2010TCUL

2" Discharge
95 GPM - 45' HEAD

Designed for heavy industrial applications, the ST2010TCUL provides exceptional performance moving debris laden water (MAX solid size 1"). An industrial grade cast iron housing and abrasion resistant impeller withstands very demanding dewatering applications. Key features include a powerful 115V electric motor, double mechanical oil filled shaft seals, sealed ball bearing impeller, powerful 115V motor, internal thermal protection, 50' power cable with strain relief, convenient and carrying handle. Also, this pump has UL/CUL listings,and handle fluids up to 140° F.

Easy Clean out Base Design

All MQ 115V 1Ø pumps are designed with internal thermal overload protection and do not require extra electrical protection, however, the CB3 control box is offered for convenient ON/OFF/AUTO and float switch operations. The CB3 comes with two SW1WOPA float switches.

Multiquip's Powerful 3-Phase Pumps

When three phase power is available, Multiquip provides three pump models that tackle a variety of industrial dewatering applications. These powerful submersibles are available in 3", 4" and 6" discharge sizes, and are available in either 230V or 460V models depending on power source.

ST3050D

3" NPT Discharge
270 GPM - 86' HEAD

The ST3050D is ideal for supporting tough utility and municipal jobs. The flexible dual voltage 230/460 5HP motor ensures optimum flow and head performance. The pump incorporates an industrial cast iron housing, dual shaft seals, sealed ball bearing impeller, carrying handle and molded 50' power cable w/ strain relief. The pump handles fluid up to 140° F.

A Control Box is required to provide overload safety shut downs that are thermal & voltage related, and to assist in powering float switches. MQ offers the control box CB200 to support the ST3050D.

ST41230 / ST41460

4" NPT Discharge
423 GPM - 138' HEAD

Powerful, compact and offering top performance output, the ST41 Series features: heat-treated stainless steel 410 shaft, double mechanical seals, oil free motor, thermal/over current motor protection, dynamically balanced high chrome impeller, and corrosion resistant stainless steel outer casing. Passes solids up to ½", has a carrying handle and comes with a molded 33' power cable w/ strain relief. The pump handles fluid up to 140° F. There are two 4" discharge models available: 230V 3Ø or 460V 3Ø.

A Control Box is required to provide safe ON/OFF functioning, overload safety shut downs that are thermal & voltage related, and proper conduits to assist in powering float switches. MQ offers the CB1269 control box to support the ST41230 and the CB1456 to support the ST41460.

ST61230 / ST61460

6" NPT Discharge
674 GPM - 105' HEAD

The ST61 Series provides exceptional flow output,durability, in an overall compact package. High performance and operating value is achieved through an oil free motor, thermal/over current motor protection, dynamically balanced high chrome impeller, heat-treated stainless steel 410 shaft, double mechanical seals, and rigid corrosion resistant stainless steel outer casing and strainer. Passes solids up to ½", lifting eyelets and comes with a molded 33' power cable w/ strain relief. The pump handles fluid up to 140° F. Depending on your electrical source, there are two 6" discharge model pumps: 230V 3Ø or 460V 3Ø.

A control box is required to provide safe ON/OFF functioning, overload safety shut downs that are thermal & voltage related, and proper conduits to assist in powering float switches. MQ offers the CB1274 control box to support the ST61230 and CB1456 Control Box to support the ST61460

Control Boxes

Model		Description
	CB3	Control box for 115V Pumps - Water resistant fiberglass housing and cable connectors prevent moisture from entering into box - (2) SW1WPOA float switches attached. Features operation switch and running light. Specs FLA (Amps): 120V 1Ø 40A.
	CB6	Control box for 230V Pumps - Water resistant fiberglass housing and cable connectors prevent moisture from entering into box. Features operation AUTO switch. Specs FLA (Amps): 230V 1Ø 12A. Includes (2) SW1WOPA Single float switches
	CB200	Control box. Magnetic starter, watertight housing and cable connectors prevent moisture from entering into box - additional cable glands support float switches. Features ON/OFF switch and running light. Electric overload helps prevent short circuits, and power spikes. Specs: 230V 1Ø 10.5A; 230V 3Ø 14.2A, 460V 3Ø 7.1A
	CB1269	Control box for model ST41230 (230V 3Ø). Magnetic starter, electronic overload protection, power spike control, and short circuit protection. Watertight outer housing and cable glands that support float switches. ON/OFF switch with running lights. Three K69 heater elements included.
	CB1274	Control Box for model ST61230 (230V 3Ø). Magnetic starter, electronic overload protection, power spike control, and short circuit protection. Watertight outer housing and cable glands that support float switches. ON/OFF switch with running lights. Three K74 heater elements included.
	CB1456	Control box for model ST41460 (460V 3Ø). Magnetic starter, electronic overload protection, power spike control, and short circuit protection. Watertight outer housing and cable glands that support float switches. ON/OFF switch with running lights. Three K56 heater elements included.
	CB1463	Control Box for model ST61460 (460V 3Ø). Magnetic starter, electronic overload protection, power spike control, and short circuit protection. Watertight outer housing and cable glands that support float switches. ON/OFF switch with running lights. Three K63 heater elements included.

Float Switches

Model		Description
	SW1A	Mechanical single float switch, 120V. Provides NEMA 5-15 Plug and piggy-back receptacle end. Corrosion resistant PVC Housing for use in sewage/water up to 140° F. UL/CUL listed. Heavy-duty contacts. Adjustable range 7" to 36". 16 gauge cord. Pressure tested to 60'. 14 Gauge - 20' cord.
	SW1WOPA	Mechanical single float switch, 120V. Open wire end. Corrosion resistant PVC Housing for use in sewage/water up to 140° F. UL/CUL listed. Heavy-duty contacts. Adjustable range 7" to 36". 16 gauge cord. Pressure tested to 60'. 14 Gauge - 20' cord. For control box applications only.
	SW2A	Double mechanical float switch, 120V. Provides holding relay to permit floats to work in series, and eliminates pump chatter in turbulent applications. UL/CUL listed. Adjustable pumping ranges 3" to 48". With NEMA 5-15 plug and piggy-back receptacle. Float housings made from rugged polypropylene with 14 Gauge 20' cords.

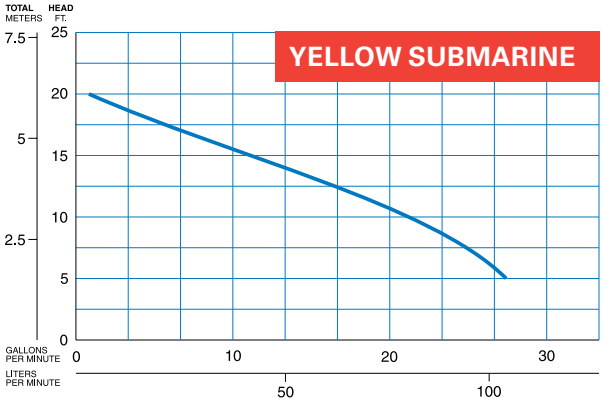
Discharge Hose

NPT THREAD		
	HD1550	Discharge Hose, 50 feet - 1½" - 75psi
	HD250	Discharge Hose, 50 feet - 2" - 75psi
	HD350	Discharge Hose, 50 feet - 3" - 60psi
	HD450	Discharge Hose, 50 feet - 4" - 60psi
	HD650	Discharge Hose, 50 feet - 6" - 45psi

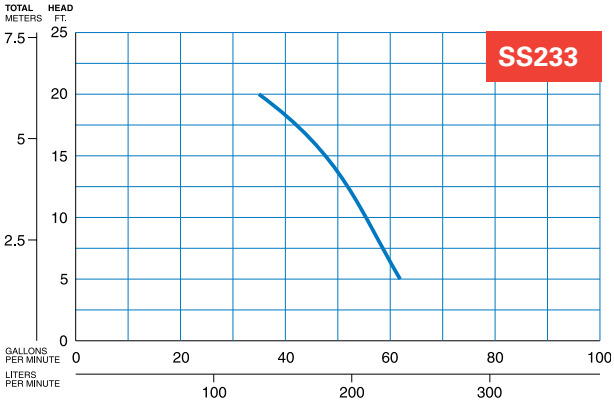
QD COUPLER		
	HDQ1550	Discharge Hose, 50 feet - 1½" Quick Coupler - 75psi
	HDQ250	Discharge Hose, 50 feet - 2" Quick Coupler - 75psi
	HDQ350	Discharge Hose, 50 feet - 3" Quick Coupler - 60psi
	HDQ450	Discharge Hose, 50 feet - 4" Quick Coupler - 60psi
	HDQ650	Discharge Hose, 50 feet - 6" Quick Coupler - 45psi

PUMP PERFORMANCE CURVES

YELLOW SUBMARINE

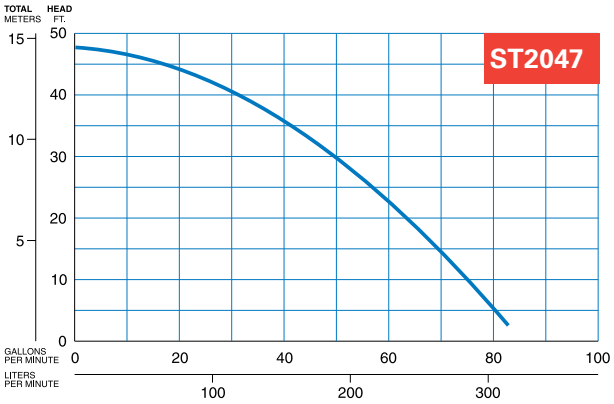


SS233

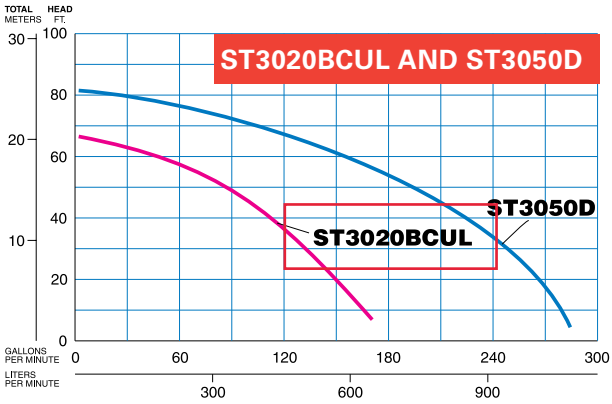


ST2037 AND ST2038P

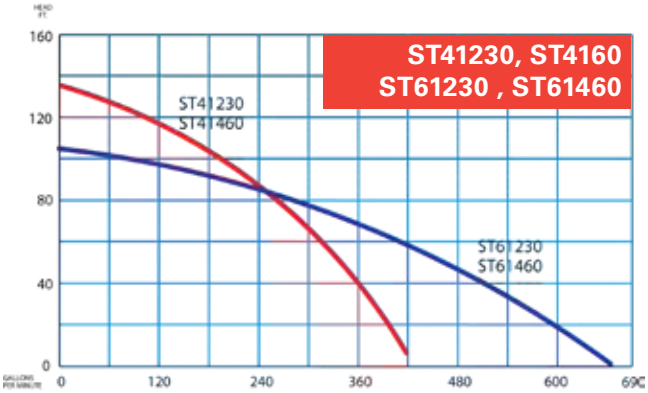
ST2047



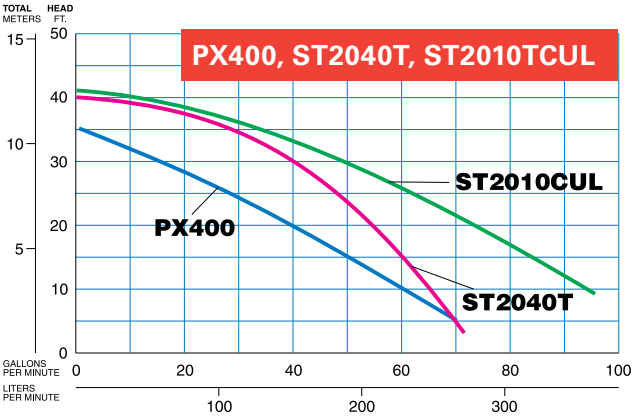
ST3020BCUL AND ST3050D



ST41230, ST4160 ST61230 , ST61460



PX400, ST2040T, ST2010TCUL



Specifications

Model	Impeller	Disc. Size in. (mm)	Max. Solids in. (mm)	Total Head ft. (m)	Capacity GPM (lpm)	HP (kw)‡	Voltage; Phase	Starting Amp.	Running Amp.	Cable Length ft. (m)	Diameter in. (mm)	Height in. (mm)	Weight lb (kg)
CENTRIFUGAL													
YELLSUB*	Heavy Polymer	1¼ (31.7)	0.4	15 (4.6)	33 (125)	0.25 (.185)	115V 1Ø	11.5	2.5	9 (2.7)	6.25 (159)	9.5 (241)	6 (2.72)
SS233*	Heavy Polymer	2 (50)	0.4	20 (6.1)	60 (227)	0.5 (0.37)	115V 1Ø	30	6	10 (7.6)	8.1 (206)	14.5 (368)	15.5 (7.0)
ST2038P*	Neoprene Rubber over Cast Iron	2 (50)	0.4	38 (11.5)	60 (227)	1 (0.75)	115V 1Ø	56	8	25 (7.6)	7.7 (196)	15.4 (391)	31 (14)
ST2037*	Neoprene Rubber over Cast Iron	2 (50)	0.4	37 (11.3)	73 (276)	1 (0.75)	115V 1Ø	34.5	6.9	25 (7.6)	7.4 (188)	15.4 (391)	31 (14)
ST2047*	Neoprene Rubber over Cast Iron	2 (50)	0.4	47 (14.3)	87 (329)	1 (0.75)	115V 1Ø	49	9.8	50 (15.2)	7.4 (188)	15.4 (391)	33 (15)
ST3020BCUL*	Cast Ductile Iron	3 (75)	0.4	72 (22)	170 (644)	2 (1.5)	230V 1Ø	52	10.5	50 (15.2)	6.7 (170)	28.5 (720)	67 (30)
ST3050D	Cast Ductile Iron	3 (75)	0.4	86 (26)	264 (999)	5 (3.75)	230/460V 3Ø	77 (230V) 39 (460V)	14.2 (230V) 7.1 (460V)	50 (15.2)	10.2 (259)	26.8 (680)	120 (54)
ST41230	Chrome Steel	4 (100)	.6" (15)	138 (42)	423 (1600)	10 (7.5)	230 3Ø	172.2	28.6	33 (10)	12.5 (317)	32 (807)	205 (93)
ST41460	Chrome Steel	4 (100)	.6" (15)	138 (42)	423 (1600)	10 (7.5)	460 3Ø	85.8	14.3	33 (10)	12.5 (317)	32 (807)	205 (93)
ST61230	Chrome Steel	6 (150)	.6" (15)	105 (32.5)	674 (2450)	15 (11.0)	230 3Ø	258	43	33 (10)	14 (352)	34 (855)	301 (137)
ST61460	Chrome Steel	6 (150)	.6" (15)	105 (32.5)	674 (2450)	15 (11.0)	460 3Ø	129	21.5	33 (10)	14 (352)	34 (855)	301 (137)
TRASH PUMPS													
PX400*	Urethane Resin	2 (50)	1 (25)	34 (10.3)	72 (273)	0.5 (0.37)	115V 1Ø	37	6.2	19 (5.6)	10 (254)	17 (430)	25 (11)
ST2040T*	Neoprene Rubber over Cast Iron	2 (50)	1 (25)	40 (12.2)	79 (299)	1 (0.75)	115V 1Ø	34	6.8	25 (7.6)	10.3 (267)	16.8 (427)	34 (15.4)
ST2010TCUL*	Cast Ductile Iron	2 (50)	1 (25)	45 (13.7)	95 (360)	1 (0.75)	115V 1Ø	53	9.4	50 (15.2)	10.3 (267)	24.5 (622)	77 (35)

Note: All Multiquip 3-phase submersible pumps require a control box to provide it with all of the operation safety shut-downs and to use with float switches (if required). If these pumps are ordered to replace a unit in an existing application where a control box is already installed then the existing control box may be sufficient. If the pump is part of a new application where a control box is not already present then a control box needs to be ordered with the 3-phase submersible pump. A control box is needed specifically to provide the 3-phase submersible pump with the voltage overload and thermal overload shutdowns, as well as a connection point for the use of float switches.

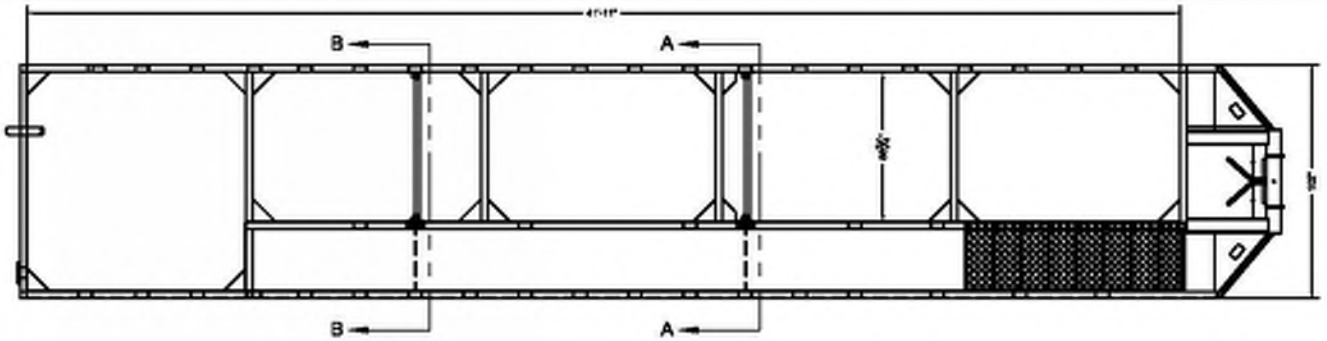
** Complies with UL and Canadian Electrical Standards.*

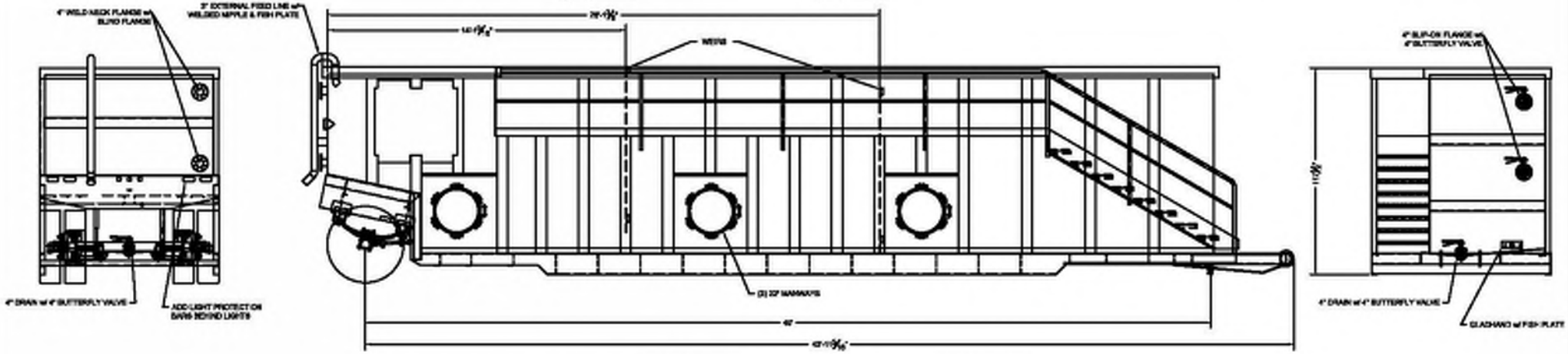
Your Multiquip dealer is:

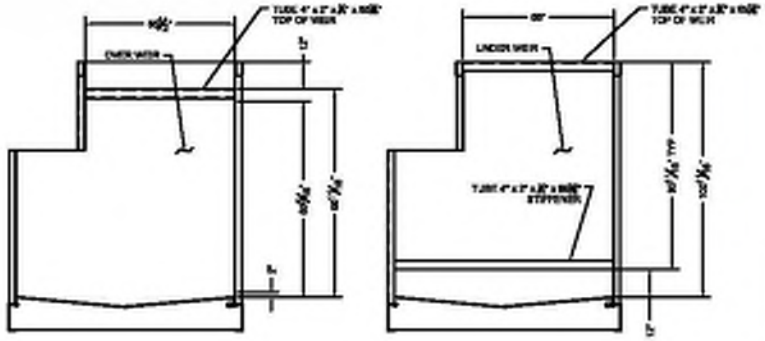
Connect with us on

Attachment C

Water Treatment System Cut Sheets







STANDARD SPECIFICATION

CAPACITY: .... 18,480 GALLONS (440 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE
SUSPENSION: .... 3 LEAF SPRING, 22,500 LBS. CACPACITY
AXLE: .... 77.5" TRACK, 22,500 LBS. CAPACITY
TIRES: .... 11R22.5 RADIAL
WHEELS: .... 8.25 x 22.5 STEEL
MANWAYS: .... 3 - 25" DIA. CURB SIDE
VALVES: .... 2 - 4" BUTTERFLY VALVE (FRONT & REAR)
1 - 4" DRAIN BUTTERFLY VALVE (REAR)
1 - 4" DRAIN BUTTERFLY VALVE (FRONT)
INLET PIPING: .... 1 - 3" PIPE SYSTEM (REAR)
BLAST: .... (INTERIOR) SSPC-SP-10 (NEAR WHITE)
(EXTERIOR) SSPC-SP-6 (COMMERCIAL BLAST)
PAINT: .... (INTERIOR) EPOXYPHENOLIC 100% SOLID 20.0 MILS D.F.T.
(EXTERIOR) FINISH COAT POLURETHANE 4.0 TO 5.0 D.F.T.

NOTE:
This drawing is a representation baseline for this model of tank. Variations between this drawing and the actual equipment do exist, primarily with appurtenance locations, sizes and quantities.

REV	CHANGE	ECN	DATE	BY
REVISION				

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

NOTES:
1. DO NOT SCALE PRINT.
2. DESTROY ALL PREVIOUS REVISIONS.
3. ALL DRAWING CHANGES ARE TO BE MADE ON CAD SYSTEM.

TOLERANCE UNLESS OTHERWISE NOTED:
.X ± .060
.XX ± .030
.XXX ± .010
∠ ± 1°

DESCRIPTION:
AL 470-WT
STANDARD SPECIFICATIONS
OPEN TOP WEIR
DOUBLE OVER ADJUSTABLE WEIRS

PLASMA / DXF FILE: —

MATERIAL: —

FIRST USED:

ECN:

DRW: CDS	DATE: 03-23-15	SIZE	PART NO.:	REV.
		B		
SCALE:	BOOK NO.:			

Electric Motor Driven

Submersible Pump

Models S3B1-E6 *and* S3B1

Size 3”

PUMP SPECIFICATIONS

Suction Head: Aluminum Alloy 356-T6 With Bonded Nitrile Lining; Maximum Operating Pressure 50 psi (345 kPa).*
Impeller: Ductile Iron 65-45-12.
Seal Plate: Aluminum Alloy 356-T6 With Bonded Nitrile Lining.
Intermediate: Aluminum Alloy 356-T6.
Motor Housing: Aluminum Alloy 356-T6.
Motor Shaft: Stainless Steel 416.
Bearings: Upper, Open Single Row Ball Bearing.
Lower, Two Shield, Double Row Ball Bearing.
Shaft Sleeve: Stainless Steel 304.
Discharge Flange: Aluminum Alloy 356-T6.
Gaskets: Cork with Nitrile Binder (NC710).
O-Rings: Buna-N.
Wetted Hardware: Standard Plated Steel and Stainless Steel.
Strainer: Urethane Coated Steel. 51% Open Area, 0.375” (9,5 mm) Diameter Openings.
Hoisting Bail: Urethane Coated Steel.

Standard Equipment

NEMA Type 3R Rainproof Control Box. *(See Section130, Pages 80 and 85.)*
Provides On-Off, Circuit Breaker and Motor Overload Protection.

Optional Equipment

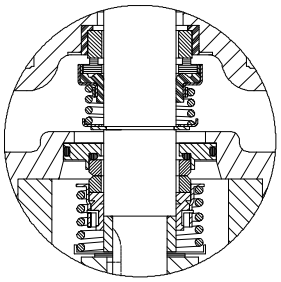
Liquid Level Control: *(See Sec. 130, Page 150.)*
a. Turtle Type Pressure Activated Level Switch.
b. .Float Activated Level Switch.
Staging Adapter Kit.

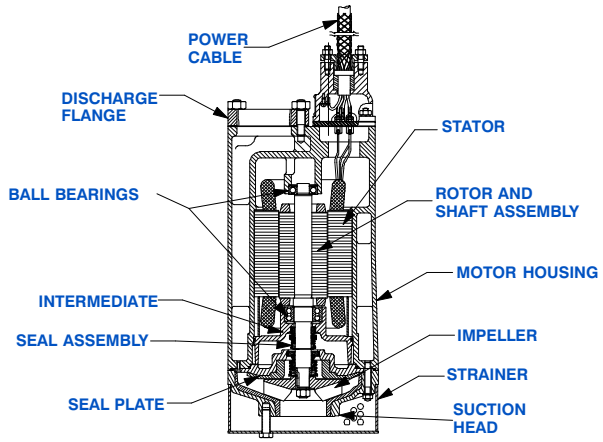
MOTOR/CABLE SPECIFICATIONS

Motor: Oil Filled Enclosure; 6.0 H.P.; 3450 R.P.M.
Single Phase: 230 Volt, 60 Hz, 34 Full Load AMPS, 7.2 kW (Max.)
Three Phase: 200/230/460/575 Volt, 60 Hz, 26.5/23/11.5/9.2 Full Load AMPS, 6.8 kW (Max.)
Power Cable: 4 Wire; Type SO/SOW/SOOW; 10 AWG; 3 Power Conductors, Plus 1 Ground. Nominal Length 50 Feet (15 m). Standard. (*Specify Alternate Length at Time of Order.*)
Recommended Generator Size: 15 kW Across the Line Start.

**Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.*

WARNING!
Do not use in explosive atmosphere or for pumping volatile flammable liquids.





SEAL SPECIFICATIONS
Tandem, Oil Lubricated.

Upper Seal: Type 21, Mechanical. Carbon Rotating Face. Ni-Resist Stationary Face. Buna-N Elastomers. Stainless Steel 18-8 Cage and Spring.

Lower Seal: Type 2, Mechanical. Tungsten Titanium Carbide Rotating and Stationary Faces. Stainless Steel 316 Stationary Seat. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 303/304 Cage and Spring.

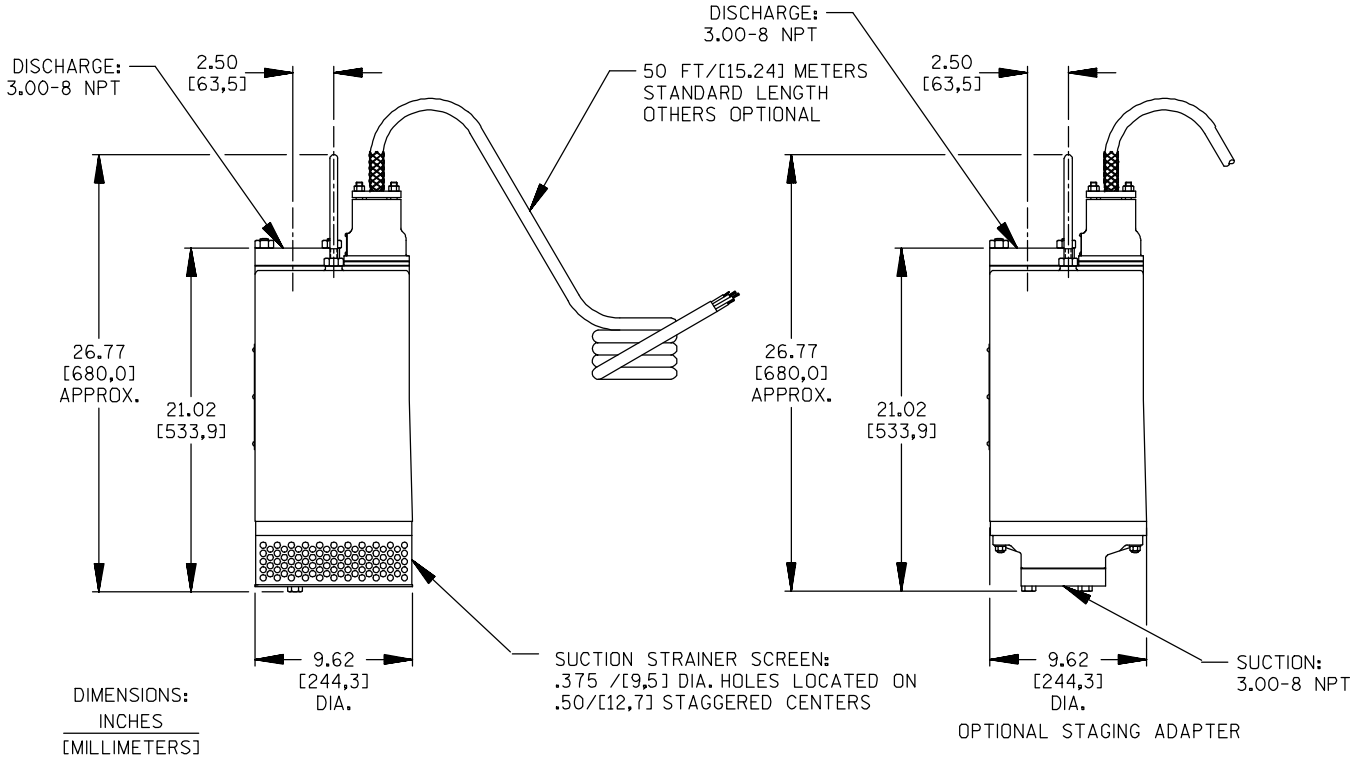
Maximum Temperature of Liquid Pumped, 122°F (50°C).*

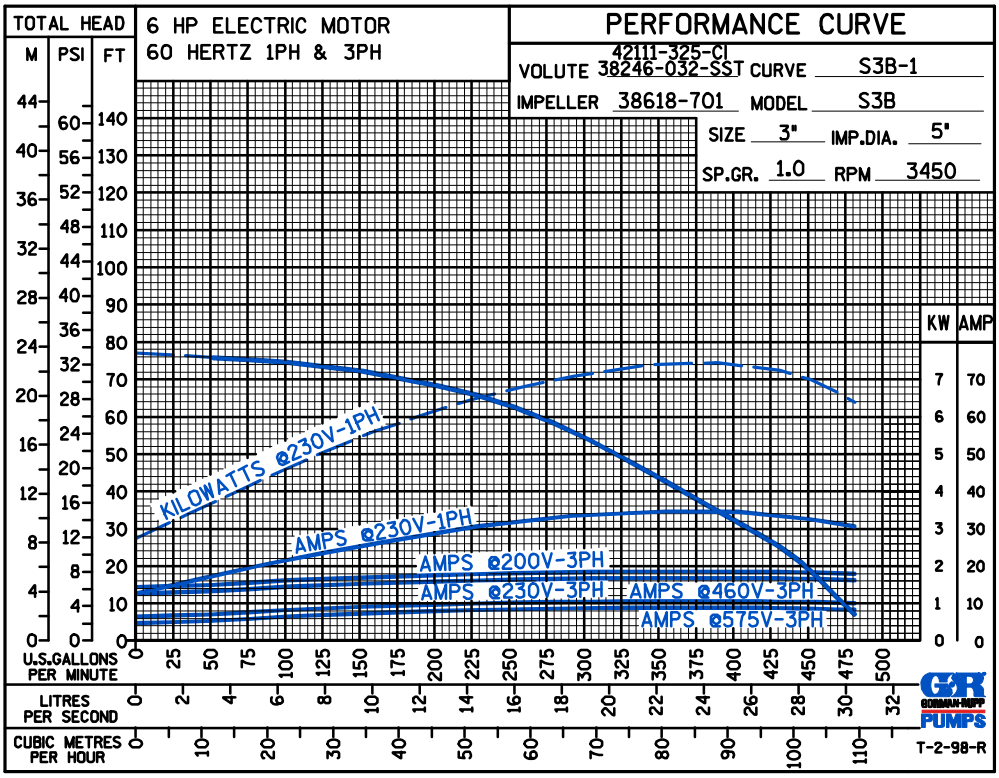
Specification Data

SECTION 130, PAGE 660

APPROXIMATE
DIMENSIONS and WEIGHTS

NET WEIGHT:	**145 LBS. (65,8 KG.)**
SHIPPING WEIGHT:	**155 LBS. (70,3 KG.)**
EXPORT CRATE SIZE:	**7.8 CU. FT. (0,22 CU. M.)**





GORMAN-RUPP PUMPS

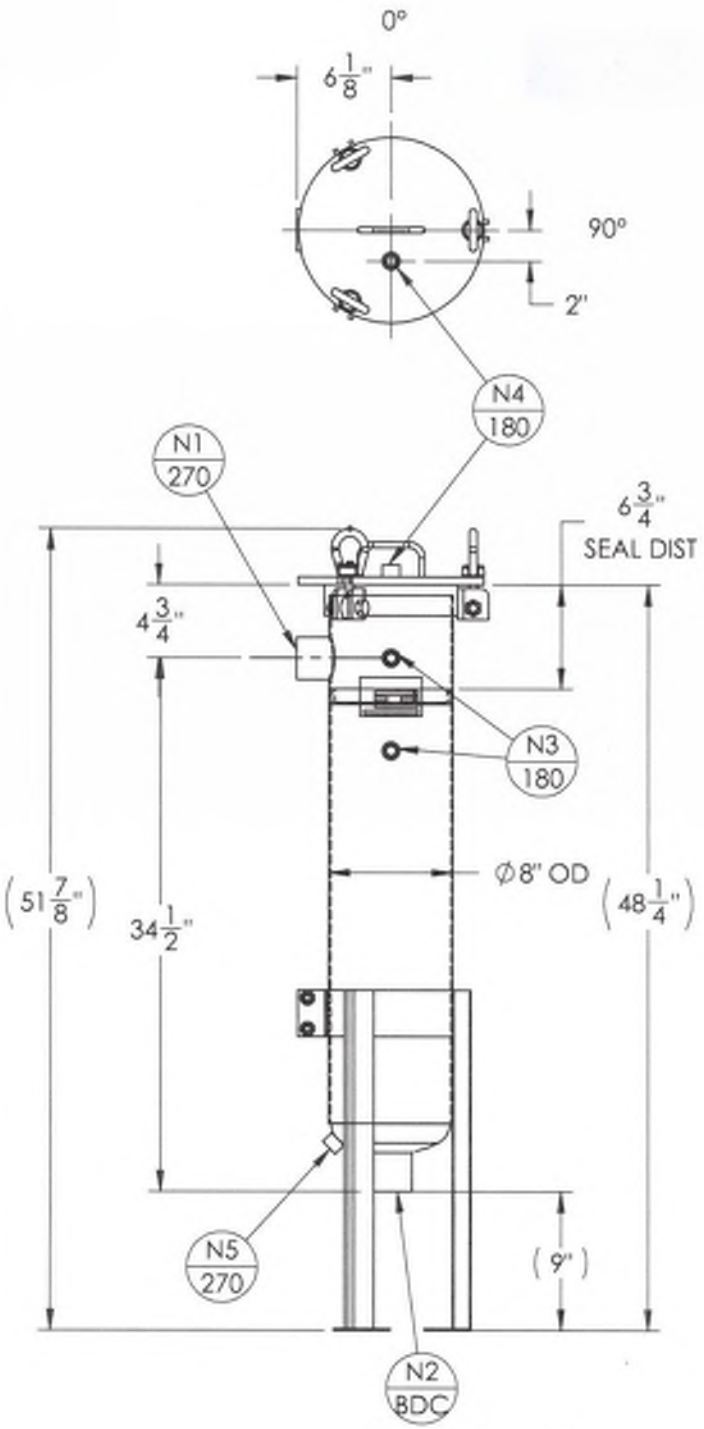
www.grpumps.com

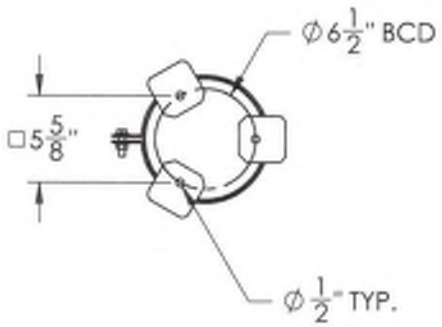
Specifications Subject to Change Without Notice

Printed in U.S.A.

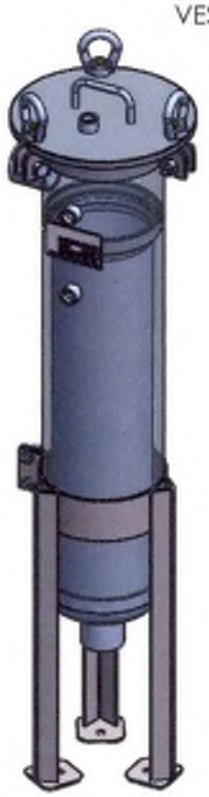
NOZZLE SCHEDULE			
MARK	QTY	SIZE / RATING	DESCRIPTION
N1	1	2" 150# NPT	INLET
N2	1	2" 150# NPT	OUTLET
N3	2	1/2" 3000# NPT	PRESS GA
N4	1	1/2" 3000# NPT	VENT
N5	1	1/2" 3000# NPT	CLEAN DRAIN
N6	-	-	DIRTY DRAIN

VESSEL DESIGN CONDITIONS			
CODE:	BEST COMMERCIAL PRACTICE		
M.A.W.P.:	150 PSI @ 250°F	M.D.M.T.:	-20° F @ 150 PSI
M.A.E.P.:	15 PSI @ 250°F		
CORROSION ALLOWANCE:	NONE	HYDROTEST PRESS:	195 PSI
STAMP:	'NC'	SERVICE:	NON LETHAL
PWHT:	N/A	RADIOGRAPHY:	N/A
MATERIAL:	SS 304/L	GASKET:	BUNA-N





DRY WEIGHT: 77.62 #'s
FLOODED WEIGHT: 140 #'s
SHIPPING WEIGHT: 100 #'s
VESSEL VOLUME: 1.0 C.F.



NOTES:
- VESSEL WILL HOUSE (QTY=1) DOUBLE LENGTH BASKET.

1:1

REV.	DATE	REVISION	DRAWN	APP'D

THIRD ANGLE PROJECTION

TOLERANCES-UNLESS OTHERWISE NOTED
DECIMAL .X ±0.1" .XX ±0.02" .XXX ±0.005"
FRACTIONAL ±1/64" ±1/32" ±1/16"
ANGULAR ±0.5°
MAX. MACHINED SURFACE FINISH 125

89 Crawford Street
Leominster, MA 01453
Tel: 774.450.7177
Fax: 888.835.0617

LRT Provided Bag Filter Housing

EQUIPMENT:	BAG FILTER HOUSING (EB SERIES)
MODEL NO:	S4EB112-2P-SW
CUSTOMER:	-

PARENT: NONE	DRAWN: CR	DATE: JAN 13 2011	JOB No. V-	DWG. No. 001-0123	REV. No. 0
PAGE: 1 OF 4	CHK'D: JM	SCALE: NTS			

Polyester Liquid Filter Bag

Features

* Polyester liquid bag filter are available with a carbon steel ring, stainless steel ring or plastic flanges.
* Heavy-duty handle eases installation and removal
* Metal ring sewn into bag top for increased durability and positive sealing
* Wide array of media fibers to meet needed temperature and micron specifications

Applications

Polyester liquid filter bags can be used in the filtering of a wide array of industrial and commercial process fluids

Sizes

Our liquid filter bags are available for all common liquid bag housings. Dimensions range from 4.12" diameter X 8" length thru 9" diameter X 32" length.

Micron Ratings

Available fibers range from 1 to 1500 microns

Options

* Bag finish or covers for strict migration requirements.
* Plastic top O.E.M. replacements
* Multi-layered filtering capabilities for higher dirt holding capacities

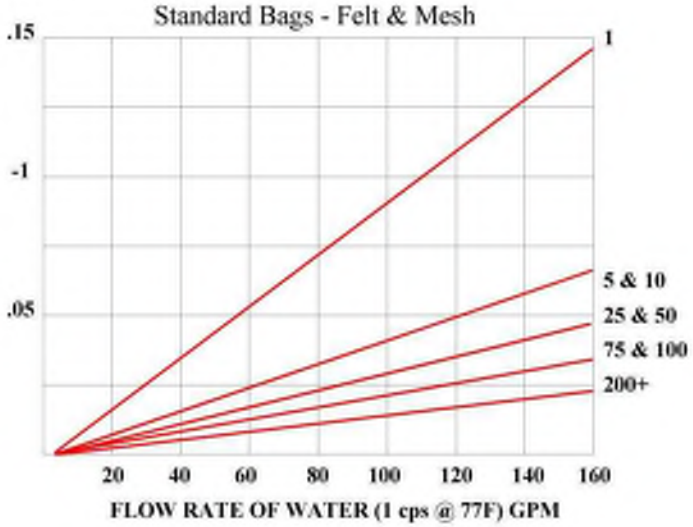
Optional Filter Media

Felt: Nomex, Polyester, Polypropylene

Monofilament: Nylon, Polyester, Polypropylene

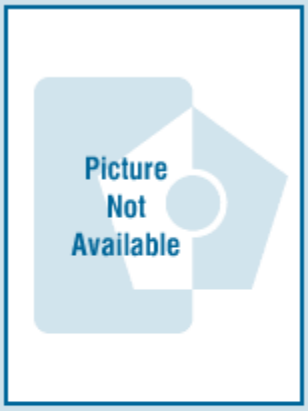
Multifilament: Nylon, Polyester

Polypropylene: Oil Removal



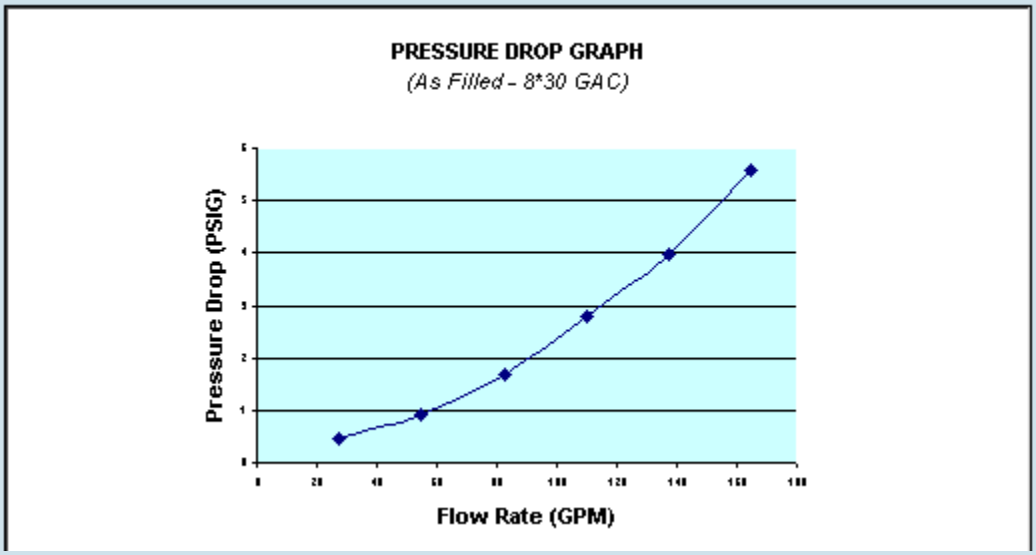
89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

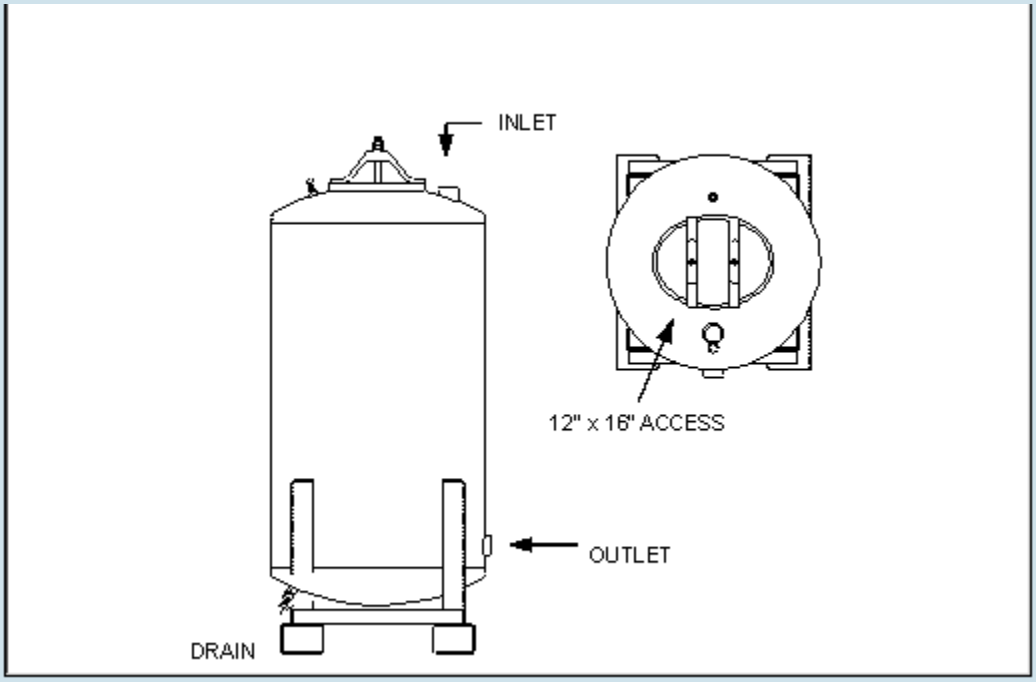
HPAF SERIES FILTERS
MODEL HPAF-3000



The HPAF-3000 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





HPAF-3000 SPECIFICATIONS			
Overall Height	8'11"	Vessel/Internal Piping Materials	CS (SA-36) / SCH 40 PVC
Diameter	60"	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	3"	External Coating	Epoxy Mastic
Drain / Vent (FNPT)	1" / 1/2"	Maximum Pressure / Temp	75 PSIG / 140° F
GAC Fill (lbs)	3,000	Cross Sectional Bed Area	19.5 FT^2
Shipping / Operational Weight (lbs)	3,525/10,635	Bed Depth/Volume	5.5 FT / 107 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

RESINTECH INC
INNOVATIONS IN ION EXCHANGE

CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

RESINTECH CGS is a sodium form standard crosslinked gel strong acid cation resin. *CGS* is optimized for residential applications that require good regeneration efficiency and high capacity. *RESINTECH CGS* is intended for use in all residential and commercial softening applications that do not have significant amounts of chlorine in the feedwater. *CGS* is supplied in the sodium form.

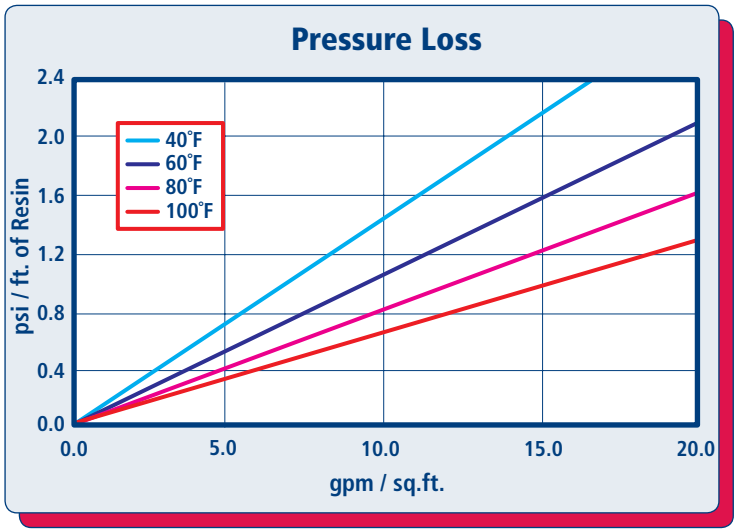
NSF/ANSI 44-61 CERTIFIED FOR MATERIAL SAFETY

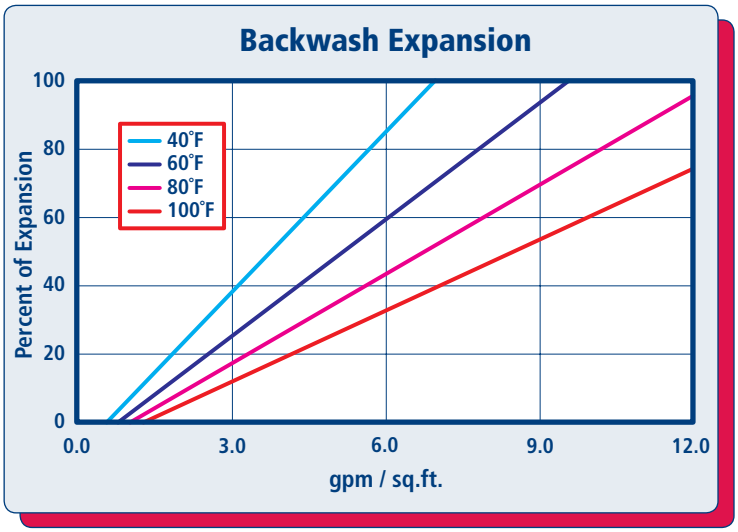
FEATURES & BENEFITS

- **RESIDENTIAL SOFTENING APPLICATIONS**
  Resin parameters are optimized for residential softeners
- **LOW COLOR THROW**
- **SUPERIOR PHYSICAL STABILITY**
  93% plus sphericity and high crush strengths together with carefully controlled particle distribution provides long life and low pressure drop
- **COMPLIES WITH US FDA REGULATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the US FDA

Prior to first use for potable water, resin should be backwashed for a minimum of 20 minutes, followed by 10 bed volumes of downflow rinse.

HYDRAULIC PROPERTIES





PRESSURE LOSS

The graph above shows the expected pressure loss of *ResinTech CGS* per foot of bed depth as a function of flow rate at various temperatures.

BACKWASH

The graph above shows the expansion characteristics of *ResinTech CGS* as a function of flow rate at various temperatures.

160 Cooper Road • West Berlin, NJ 08091 USA • p: 856.768.9600 • f: 856.768.9601 • e: ixresin@resintech.com • w: resintech.com

RESINTECH® CGS

PHYSICAL PROPERTIES

Polymer Structure	Styrene/DVB
Polymer Type	Gel
Functional Group	Sulfonic Acid
Physical Form	Spherical beads
Ionic Form as shipped	Sodium
Total Capacity	
Sodium form	>1.8 meq/mL
Water Retention	
Sodium form	40 to 52 percent
Approximate Shipping Weight	
Sodium form	50 lbs./cu.ft.
Screen Size Distribution (U.S. mesh)	16 to 50
Maximum Fines Content (<50 mesh)	1 percent
Minimum Sphericity	90 percent
Uniformity Coefficient	1.6 approx.
Resin Color	Amber

Note: Physical properties can be certified on a per lot basis, available upon request

SUGGESTED OPERATING CONDITIONS

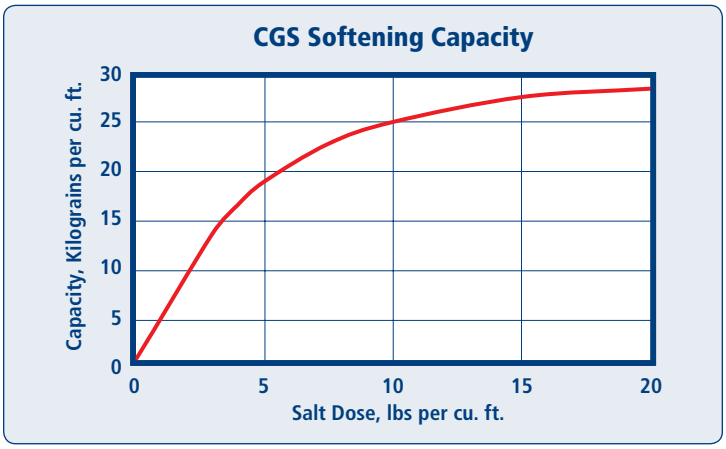
Maximum continuous temperature	
Sodium form	250˚F
Minimum bed depth	24 inches
Backwash expansion	25 to 50 percent
Maximum pressure loss	25 psi
Operating pH range	0 to 14 SU
Regenerant Concentration	
Salt cycle	10 to 15 percent NaCl
Regenerant level	4 to 15 lbs./cu.ft.
Regenerant flow rate.	0.5 to 1.5 gpm/cu.ft.
Regenerant contact time	>20 minutes
Displacement flow rate	Same as dilution water
Displacement volume	10 to 15 gallons/cu.ft.
Rinse flow rate	Same as service flow
Rinse volume	35 to 60 gallons/cu.ft.
Service flow rate	1 to 10 gpm/cu.ft.

Note: These guidelines describe average low risk operating conditions. They are not intended to be absolute minimums or maximums.
For operation outside these guidelines, contact ResinTech Technical Support

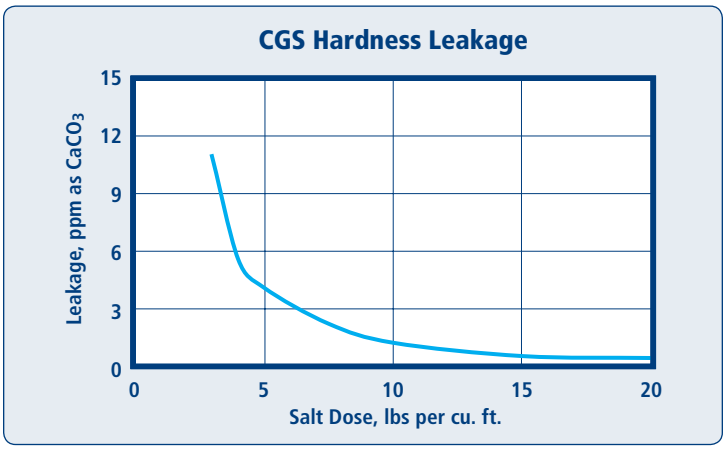
APPLICATIONS

SOFTENING

ResinTech CGS is a standard crosslinked cation resin optimized for residential and commercial applications. This type of resin is easier to regenerate than the higher crosslinked resins. CGS has marginal resistance to chlorine and other oxidants and is not ideal for high temperature and other high stress applications.



Capacity and leakage data are based on the following: 2:1 Ca:Mg ratio, 500 ppm TDS as CaCO3, 0.2% hardness in the salt and 10% brine concentration applied co-currently through the resin over 30 minutes. No engineering downgrade has been applied.



RESINTECH INC.
INNOVATIONS IN ION EXCHANGE

East Coast - West Berlin, NJ p:856.768.9600 • Midwest - Chicago, IL p:708.777.1167 • West Coast - Los Angeles, CA p:323.262.1600

ZENNER PERFORMANCE
Cast Iron Turbine Meters
Sizes 2” through 12”

INTRODUCTION: ZENNER PERFORMANCE Turbine Meters are designed for applications where flows are usually moderate to high and occasionally low. They are used in measurement of potable cold water in commercial and industrial services where flows are in one direction.

OPERATION: Water flows through the turbine section which causes the rotor to turn proportionately to the quantity of water flowing through the meter. A drive magnet transmits the motion of the rotor to a driven magnet located within the hermetically sealed register. The magnet is connected to a gear train which translates the rotations into volume totalization displayed on the register dial face. The only moving parts in the meter are the rotor assembly and vertical shaft .

CONSTRUCTION: ZENNER PERFORMANCE Turbine Meters consist of three basic components: Cast Iron Epoxy Coated main case, measuring element, and sealed register. The measuring element assembly includes the rotor assembly, vertical shaft and a calibration vane which eliminates the need for calibration change gears.

MAINTENANCE: ZENNER PERFORMANCE Turbine Meters are engineered and manufactured to provide long-term service and operate virtually maintenance free. If necessary the universal measuring element (UME) can be removed from the main case for maintenance. Interchangeability of certain parts between like sized meters minimizes spare parts inventory.

CONFORMANCE: ZENNER PERFORMANCE Turbine Meters are tested and comply with AWWA C701 Class II performance standards.

STRAINERS: ZENNER PERFORMANCE recommends the use of a separate strainer upstream from the turbine meter. Strainers reduce the chance of damage to the rotor as well as the frequency in which it must be removed for inspection. The lack of a strainer may void the warranty of the turbine meter.

CONNECTIONS: Companion flanges for installation of meters on various pipe types and sizes are available in bronze or cast iron.

PMT04

PMT06

ZENNER PERFORMANCE
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

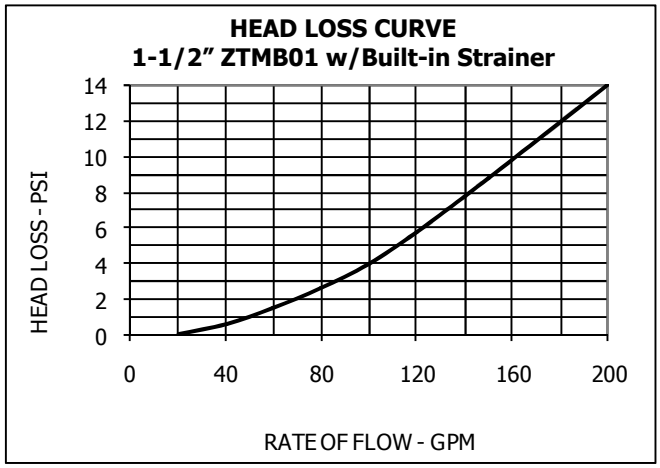
MODEL		PMT02	PMT03	PMT04	PMT06	PMT08	PMT10	PMT12
SIZE		2"	3"	4"	6"	8"	10"	12"
Flow rate maximum intermittent	USGPM	400	550	1250	2500	4500	7000	8800
Maximum continuous	USGPM	200	450	1000	2000	3500	5500	6200
Optimum operating flow range	USGPM	3 - 200	5 - 550	10 - 1250	20 - 2500	30 - 4500	50 - 7000	90 - 8800
Low flow rate	USGPM	2	2-1/2	5	12	20	45	65
Start-up flow rate	USGPM	7/8	1-1/8	1-3/8	7-1/2	8	15	15
Maximum Working Pressure	P.S.I.	160	160	160	160	160	160	160
Maximum Temperature	Deg. F	140	140	140	140	140	140	140
Length	Inches	7-7/8	8-7/8	9-7/8	11-7/8	13-3/4	17-3/4	19-5/8
Height	Inches	9-1/2	10-1/4	11	12-7/8	14-1/4	19	20-1/4
Width	Inches	7	7-1/2	9	11	13-1/2	16	19
Weight	Pounds	24	32	38	84	126	225	255
Number of holes per flange		4	4	8	8	8	12	12

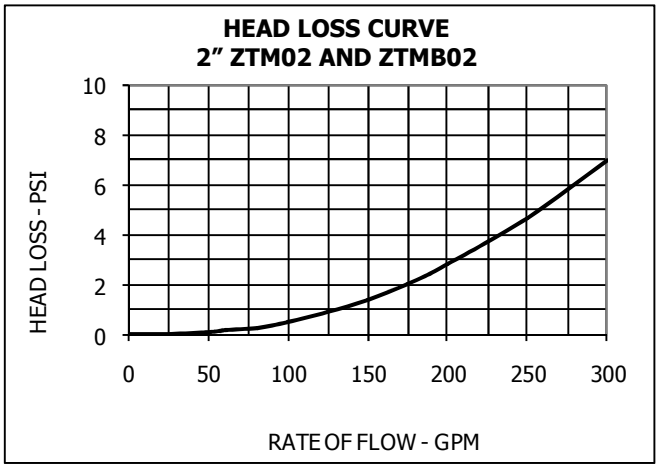
ZENNER PERFORMANCE
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

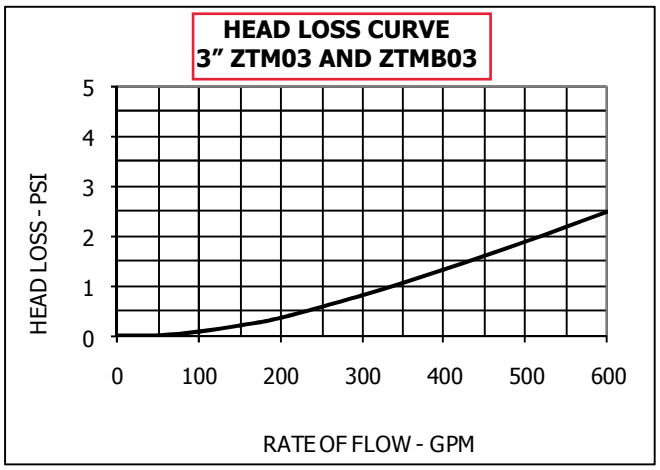
ZENNER ZTM and ZTMB Turbine Water Meters

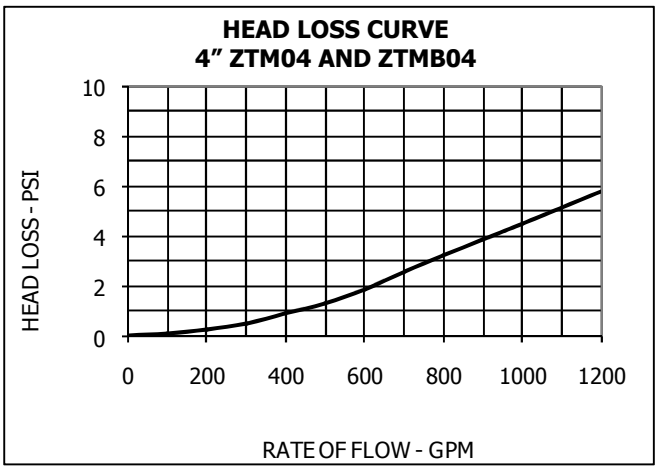
(Without Strainer)

Typical Head Loss Curves









ZENNER USA
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www.zennerusa.com

Attachment D

Calculations

DESIGN CALCULATIONS

Water Treatment System
50 Rogers Street
Cambridge, MA

Treatment System Description:
System designed to treat groundwater within the excavation area at a maximum flow rate of 150 gallons per minute (gpm). Components include one 18,000-gallon weir tank, a 3-inch submersible transfer pump, a triple bag filter unit, two (2) contingent carbon vessels each filled with 3,000 pounds of reactiviated liquid phase carbon, one (1) contingent ion exchange vessel with 60 cubic feet of cation resin and a flow totalizer meter. Refer to the Water Treatment System Schematic (Figure 4).

A. Dewatering Sump Pumps

Main Building Area
Number of Pumps = 9
Type = Submersible Centrifugal
Pump Make/Model = Multiquip ST3020BCL or equiv.
Power = 1HP, 230V, 1-phase
Discharge = 3"
Pump Qmax = 170 gpm
Q design = 150 gpm/9 pumps = 16.6 gpm/pump
TDH @ Q design = 65'...per pump curve
To achieve Q design = 16.6 gpm/pump; TDH @ pump must be <= 65'

Existing Grade Elev. = 21' (assumed at staging area)
Bottom of Deepest Excav. Elev. = -7'
Pump Intake Elev. (3' below botom of excav.) = -10'
Weir Tank Inlet Elev. (10' above exist. grade) = 31'
Elevation Head = 31' - (-10') = 41'
Friction Head through 100' of 3" Hose @ 16.6 gpm = 0.1'
Total Head = Elevation + Friction = 41' + 0.1' = 41.1'
Since 41.1' < 65'; pump OK

Sanitary Tank Area
Number of Pumps = 2
Type = Submersible Centrifugal
Pump Make/Model = Multiquip ST3020BCL or equiv.
Power = 1HP, 230V, 1-phase
Discharge = 3"
Pump Qmax = 170 gpm
Q design = 100 gpm/2 pumps = 50 gpm/pump
TDH @ Q design = 58'...per pump curve
To achieve Q design = 50 gpm/pump; TDH @ pump must be <= 58'

Existing Grade Elev. = 21' (assumed at staging area)
Bottom of Deepest Excav. Elev. = 0'
Pump Intake Elev. (3' below botom of excav.) = -3'
Weir Tank Inlet Elev. (10' above exist. grade) = 31'
Elevation Head = 31' - (-3') = 34'
Friction Head through 100' of 3" Hose @ 50 gpm = 0.8'
Total Head = Elevation + Friction = 34' + 0.8' = 34.8'
Since 34.8' < 58'; pump OK

Sewer Tie-In Area
Number of Pumps = 2
Type = Submersible Centrifugal
Pump Make/Model = Multiquip ST3020BCL or equiv.
Power = 1HP, 230V, 1-phase
Discharge = 3"
Pump Qmax = 170 gpm
Q design = 100 gpm/2 pumps = 50 gpm/pump
TDH @ Q design = 58'...per pump curve
To achieve Q design = 50 gpm/pump; TDH @ pump must be <= 58'

Existing Grade Elev. = 21' (assumed at staging area)
Bottom of Deepest Excav. Elev. = 2.5'
Pump Intake Elev. (3' below botom of excav.) = -0.5'
Weir Tank Inlet Elev. (10' above exist. grade) = 31'
Elevation Head = 31' - (-0.5') = 31.5'
Friction Head through 100' of 3" Hose @ 50 gpm = 0.8'
Total Head = Elevation + Friction = 31.5' + 0.8' = 32.3'
Since 32.3' < 58'; pump OK

B. Weir Tank

Quantity = 1
V = 18,000 gallons
Qsystem - 150gpm
Qtank = Qsystem

Design Detention Time dt = V/Q = 18,000 gallons/150 gpm = 120 minutes = 2 hrs

Typical dt = 2 hrs for primary settling
Since design dt = typical dt; OK

C. Submersible Transfer Pump

Number of Pumps = 1
Type = Submersible Centrifugal
Pump Make/Model = Gorman-Rupp S3B1 or equiv. Power = 6HP, 230V, 3-phase
Discharge = 3"
Pump Qmax = approx. 475 gpm
Q design = 150 gpm
TDH @ Q design = 72'...per pump curve
To achieve Q design = 150 gpm; TDH @ pump must be <= 72'. Refer to Section H below.

D. Bag Filters

Three single bag filters plumbed in parallel (two on-line; other in stand-by)
Press max = 125 psi
Qmax = 150 gpm/filter
Q system = 150 gpm/2 filters = 75 gpm/filter
Since Q system < Qmax; OK
Press Drop without bags @ 75 gpm = approx. 0.3 psi = 0.7 feet
Press Drop with 5 micron bags @ 75 gpm = approx. 0.3 psi + 0.07 psi = 0.37 psi = 0.9 feet
Note: Bags typically changed out at 5 psi pressure differential. Therefore, max pressure drop = 5 psi = 11.6 feet.

E. Carbon Filters (Contingency)

Two 3,000 lb vessels in series
Model HPAF 3000
Press max = 75 psi
Bed Diameter = 5 feet
Bed Area = pi x (5 feet)(5 feet)/4 = 19.6 SF
Bed Volume = 107 CF (per spec sheet)
Bed Depth = V/A = 107 CF/ 19.6 SF = 5.5 feet
Temperature (groundwater) = approximately 50 degrees

Press. Drop at 150 gpm = 4.5 psi/vessel (per curve) = 10.4 feet/vessel

EBCT = Bed Volume/Q = (107CF x 7.48 gal/CF)/150 gpm = 5.3 min. (per vessel) or 10.6 minutes total

Typical range for VOCs 7 to 10 minutes
Since 10.6 min > range; OK

F. Ion Exchange Vessel (Contingency)

One HPAF-3000 filter bed with 60 cuft of ion exchange resin
Press max = 75 psi
Qmax = varies with bed depth

Load Rate (design) = 2.0 to 4.0 gpm/CF of resin (typical design spec)
Bed Depth (design) > 24 inches or 2'
Bed Diameter = 5 feet
Bed Area = pi x (5 feet)(5 feet)/4 = 19.6 SF
Bed Volume = 60 CF
Bed Depth = V/A = 60 CF/ 19.6 SF = 3.1 feet
Since Bed Depth (3.1') > Bed Depth Design (2'); OK

Superficial Velocity = Q/A = 150 gpm/19.6 SF = 7.6
Temperature (groundwater) = approximately 50 degrees
Press. Drop @ Superficial Velocity 7.6 = 0.9 psi/bed foot (per cut sheet)
therefore, pressure drop = 3.1 x 0.9 = 2.79 psi = 6.4 feet

EBCT = Bed Volume/Q = (60 CF x 7.48 gal/CF)/150 gpm = 3 min.
EBCT is not a primary design parameter since it depends upon site-specific contaminant concentration

G. Flow Meter/Totalizer

Make/Model: Zenner Turbine Meter (Model ZTM03 and ZTMB03)
Size = 3 inch
Qmax - 450 gpm
Qmin = 5 gpm
Q system = 150 gpm;
Since Qmin < Q system < Qmax; OK
Press Drop @ 150 gpm = 0.4 feet (from cutsheet)

H. System Head Loss (Submersible Transfer Pump to Discharge)

Components	*Scenario 1 (clean bag filters) Head Loss (feet)*	*Scenario 2 bag filters at 5 psi Head Loss (feet)*
3 inch hose/piping at 150 gpm (100' @ 5.7'/100')	5.7	5.7
3" fittings (equiv. pipe length 100' @ 5.7'/100')	5.7	5.7
Bag Filters	0.9 (clean bag)	11.6
Carbon Vessel 1 (contingency)	10.4	10.4
Carbon Vessel 2 (contingency)	10.4	10.4
Ion Exchange Vessel (contingency)	6.4	6.4
Flow Meter	0.4	0.4
3" Discharge Hose (100' @ 5.7'/100')	5.7	5.7
Total	45.6	56.3

Qsystem = 150 gpm
Pump TDH @ 150 gpm = 72 feet (refer to Section C).
Since total head loss for Scenerios 1 and 2 < 72 feet; system can achieve 150 gpm. Therefore; design OK.

APPENDIX E

National Register of Historic Places Documentation

Massachusetts Historical Commission

William Francis Galvin, Secretary of the Commonwealth

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Massachusetts Cultural Resource Information System

MACRIS

Scanned forms and photos now available for selected towns!

The Massachusetts Cultural Resource Information System (MACRIS) allows you to search the Massachusetts Historical Commission database for information on historic properties and areas in the Commonwealth.

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Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Cambridge; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
CAM.A	Cambridge Common Historic District		Cambridge	
CAM.B	Lockhart, William L. and Company Coffin Factory		Cambridge	
CAM.C	Blake and Knowles Steam Pump Company		Cambridge	
CAM.D	Fort Washington Historic District		Cambridge	
CAM.E	East Cambridge Historic District		Cambridge	
CAM.F	Winter Street Historic District		Cambridge	
CAM.G	Cambridge Multiple Resource Area		Cambridge	
CAM.H	Lechmere Point Corporation Houses		Cambridge	
CAM.I	Sacred Heart Church, Rectory, School and Convent		Cambridge	
CAM.J	Upper Magazine Street Historic District		Cambridge	
CAM.K	Hastings Square Historic District		Cambridge	
CAM.L	Salem - Auburn Streets Historic District		Cambridge	
CAM.M	Inman Square Historic District		Cambridge	
CAM.N	Old Cambridgeport Historic District		Cambridge	
CAM.O	Norfolk Street Historic District		Cambridge	
CAM.P	Massachusetts Institute of Technology		Cambridge	
CAM.Q	Central Square Historic District		Cambridge	
CAM.R	Bigelow Street Historic District		Cambridge	
CAM.S	Garfield Street Historic District		Cambridge	
CAM.T	Harvard Street Historic District		Cambridge	
CAM.U	Kirkland Place Historic District		Cambridge	
CAM.V	Maple Avenue Historic District		Cambridge	
CAM.W	City Hall Historic District		Cambridge	
CAM.X	Shady Hill Historic District		Cambridge	
CAM.Y	Ash Street Historic District		Cambridge	
CAM.Z	Avon Hill Historic District		Cambridge	

Inv. No.	Property Name	Street	Town	Year
CAM.AA	Berkeley Street Historic District		Cambridge	
CAM.AB	Harvard Square Historic District		Cambridge	
CAM.AC	Harvard Houses Historic District		Cambridge	
CAM.AD	Harvard Yard Historic District		Cambridge	
CAM.AE	Old Cambridge Historic District		Cambridge	
CAM.AF	Gray Gardens East and West Historic District		Cambridge	
CAM.AG	Memorial Drive Apartments Historic District		Cambridge	
CAM.AH	Follen Street Historic District		Cambridge	
CAM.AI	Bennink - Douglas Cottages		Cambridge	
CAM.AJ	Charles River Basin Historic District		Cambridge	
CAM.AK	Boston Woven Hose and Rubber Complex		Cambridge	
CAM.AL	Fresh Pond		Cambridge	
CAM.AM	Old Cambridge Historic District		Cambridge	
CAM.AN	Harvard Riverfront		Cambridge	
CAM.AO	East Cambridge		Cambridge	
CAM.AP	Hubbard Park Historic District		Cambridge	
CAM.AQ	Davenport - Allen and Endicott Factory		Cambridge	
CAM.AR	Mount Auburn Cemetery		Cambridge	
CAM.AS	Metropolitan Park System of Greater Boston		Cambridge	
CAM.AT	Elmwood (James Russell Lowell House)		Cambridge	
CAM.AU	Christ Church		Cambridge	
CAM.AV	Blake and Knowles Steam Pump Company		Cambridge	
CAM.AW	Alewife Brook Parkway		Cambridge	
CAM.AX	Fresh Pond Parkway		Cambridge	
CAM.AY	Church of the Blessed Sacrament Catholic Church		Cambridge	
CAM.AZ	Immaculate Conception Roman Catholic Church		Cambridge	
CAM.BA	Immaculate Conception (Lithuanian) Catholic Church		Cambridge	
CAM.BB	Orchard Street Area		Cambridge	
CAM.BC	Central Square Historic District		Cambridge	
CAM.BD	Cambridge Common Historic District		Cambridge	
CAM.BE	Old Harvard Yard		Cambridge	
CAM.BF	Berkeley Street Historic District		Cambridge	
CAM.BG	Harvard Square Historic District		Cambridge	
CAM.BH	Volpe Center		Cambridge	
CAM.1	Wyeth, John House	56 Aberdeen Ave	Cambridge	1841
CAM.1009		24 Agassiz St	Cambridge	1889

Inv. No.	Property Name	Street	Town	Year
CAM.1010	Shaw, Edward L. House	30 Agassiz St	Cambridge	1890
CAM.1011	Sands, M. Winslow House	32 Agassiz St	Cambridge	1891
CAM.1012	Blackman, Horace House	33 Agassiz St	Cambridge	1890
CAM.1353	Standard Plate Glass Company Building	270 Albany St	Cambridge	1920
CAM.902	Alewife Brook Parkway Bridge over B & M Railroad	Alewife Brook Pkwy	Cambridge	1929
CAM.903	Alewife Brook Parkway Bridge over B & M Railroad	Alewife Brook Pkwy	Cambridge	1929
CAM.9012	Alewife Brook Parkway - Northern Segment	Alewife Brook Pkwy	Cambridge	1908
CAM.9013	Alewife Brook Parkway Tree Border	Alewife Brook Pkwy	Cambridge	r 1920
CAM.1372	Immaculate Conception Roman Catholic Church	45 Alewife Brook Pkwy	Cambridge	1929
CAM.1373	Immaculate Conception Catholic Church Rectory	45 Alewife Brook Pkwy	Cambridge	1935
CAM.359		6-24 Allston St	Cambridge	1946
CAM.2	Fay, Isaac House	125 Antrim St	Cambridge	1843
CAM.3	Withey, S. B. House	10 Appian Way	Cambridge	1855
CAM.4	Howe, Lois Lilly House	6 Appleton St	Cambridge	1887
CAM.5	Cook, William House	71 Appleton St	Cambridge	1876
CAM.1016		8-10 Arlington St	Cambridge	1864
CAM.1027	Aldrich, Frank A. House	11 Arlington St	Cambridge	1899
CAM.1017		12-14 Arlington St	Cambridge	1864
CAM.1028	Graustein, Adolph H. House	19 Arlington St	Cambridge	1902
CAM.1018		22 Arlington St	Cambridge	1862
CAM.1019	Fillmore, Wellington House	24 Arlington St	Cambridge	1869
CAM.1347		25 Arlington St	Cambridge	
CAM.1020	Moor, Rev. Clark House	26 Arlington St	Cambridge	1869
CAM.1021	Blackman, Horace P. House	28 Arlington St	Cambridge	1876
CAM.1022		30 Arlington St	Cambridge	1876
CAM.1023	Jameson, Edwin A. L. House	32 Arlington St	Cambridge	1872
CAM.1029	Davis, John House	33 Arlington St	Cambridge	1869
CAM.1024		36 Arlington St	Cambridge	1872
CAM.1030	Kelsey, Albert House	37 Arlington St	Cambridge	1875
CAM.1025	Moor, Rev. Clark Double House	38-40 Arlington St	Cambridge	1874
CAM.1026	Boardman, Charles House	42 Arlington St	Cambridge	1871
CAM.1061	Harvard Catholic Student Center	20 Arrow St	Cambridge	c 1890
CAM.1062	Saint Paul's Church	24 Arrow St	Cambridge	r 1920
CAM.784	Brooks, John House	5 Ash St	Cambridge	1887
CAM.6	Johnson, Philip House	9 Ash St	Cambridge	1942
CAM.785	Ela, Lucia House	13 Ash St	Cambridge	1869

Inv. No.	Property Name	Street	Town	Year
CAM.787	Eliot, T. S. House	16 Ash St	Cambridge	1855
CAM.786	Nowell, Henry House	19 Ash St	Cambridge	1825
CAM.788	Hunnewell, James A. House	6 Ash Street Pl	Cambridge	1848
CAM.522		107 Auburn St	Cambridge	1803
CAM.523		108-110 Auburn St	Cambridge	1803
CAM.524		114 Auburn St	Cambridge	c 1844
CAM.525		119 Auburn St	Cambridge	c 1829
CAM.526		122 Auburn St	Cambridge	c 1840
CAM.527		131 Auburn St	Cambridge	c 1830
CAM.528		134 Auburn St	Cambridge	c 1845
CAM.7	Ellis, Asa House	158 Auburn St	Cambridge	1805
CAM.564	Hotel Eliot	66 Austin St	Cambridge	c 1885
CAM.565	Hotel Austin	70 Austin St	Cambridge	c 1885
CAM.8	Brabrook, Ezra H. House	42-44 Avon St	Cambridge	1849
CAM.352	Blake and Knowles Main Foundry	180 Bent St	Cambridge	c 1895
CAM.1035		1 Berkeley Pl	Cambridge	1892
CAM.1036		2 Berkeley Pl	Cambridge	1892
CAM.1037		3 Berkeley Pl	Cambridge	1892
CAM.1038		4 Berkeley Pl	Cambridge	1910
CAM.1039		5 Berkeley Pl	Cambridge	1900
CAM.1040		6 Berkeley Pl	Cambridge	1914
CAM.1041		7 Berkeley Pl	Cambridge	1913
CAM.1042		8 Berkeley Pl	Cambridge	1931
CAM.1043	Pryor - Brown House	1 Berkeley St	Cambridge	1852
CAM.10	Thayer, Prof. Studio	2 1/2 Berkeley St	Cambridge	1894
CAM.1044	Pryor - Howells House	3 Berkeley St	Cambridge	1856
CAM.1045	Dana, Richard H. House	4 Berkeley St	Cambridge	1851
CAM.1046	Wyeth - Allen House	5-7R Berkeley St	Cambridge	1852
CAM.1047		6 Berkeley St	Cambridge	1853
CAM.1048	Ware, Henry House	8 Berkeley St	Cambridge	1859
CAM.1049	Allyn, John House	11 Berkeley St	Cambridge	1886
CAM.1050		12 Berkeley St	Cambridge	1881
CAM.1051		13 Berkeley St	Cambridge	1898
CAM.1052	Williston, Lyman House	15 Berkeley St	Cambridge	1863
CAM.1053		16 Berkeley St	Cambridge	1905
CAM.1054		17 Berkeley St	Cambridge	1863
CAM.1055		19 Berkeley St	Cambridge	1854
CAM.1056	Newell, William House	20 Berkeley St	Cambridge	1856

Inv. No.	Property Name	Street	Town	Year
CAM.1057		21 Berkeley St	Cambridge	1854
CAM.1058	Fiske, John House	22 Berkeley St	Cambridge	1877
CAM.1059		23 Berkeley St	Cambridge	1854
CAM.1060		24 Berkeley St	Cambridge	1936
CAM.1355	Craft, William House	5 Bigelow St	Cambridge	1869
CAM.1356	Sharry, William J. House	5A Bigelow St	Cambridge	1940
CAM.663	Montague, Charles House	6 Bigelow St	Cambridge	1873
CAM.655	Snow, Simeon House	7 Bigelow St	Cambridge	1869
CAM.1360	Rhodes, Silas Jr. House	8 Bigelow St	Cambridge	1871
CAM.656	Pollard, John Double House	9-11 Bigelow St	Cambridge	1874
CAM.664	Hurd, Theodore House	10-12 Bigelow St	Cambridge	1884
CAM.657	Bird, Henry House	13 Bigelow St	Cambridge	1874
CAM.1361	Pike, Walter House	14 Bigelow St	Cambridge	1888
CAM.658	Davis, Curtis House	15 Bigelow St	Cambridge	1873
CAM.1362	Brazier, Abbie House	16 Bigelow St	Cambridge	1874
CAM.659	Whitely, Hiram House	17 Bigelow St	Cambridge	1873
CAM.1363	Sawyer - Dole House	18 Bigelow St	Cambridge	1876
CAM.1357	Oxford, Charles House	19 Bigelow St	Cambridge	1871
CAM.660	Snow - Twitchell Double House	21-23 Bigelow St	Cambridge	1873
CAM.665	Hyde, Edward House	22 Bigelow St	Cambridge	1870
CAM.1348	Robbins Block	24-46 Bigelow St	Cambridge	1871
CAM.661	Jessop, Joseph House	25 Bigelow St	Cambridge	1872
CAM.1358	Jessop Tenement House	29 Bigelow St	Cambridge	1891
CAM.1359	Whitcomb, Peter Double House	31-33 Bigelow St	Cambridge	1872
CAM.662	Davis, John W. House	35 Bigelow St	Cambridge	1870
CAM.1406	Volpe Center - Shipping and Receiving	182 Binney St	Cambridge	1965
CAM.357	Blake and Knowles Machine Shop #2	195 Binney St	Cambridge	1917
CAM.358	Blake and Knowles Machine Shop #3	199 Binney St	Cambridge	1918
CAM.356	Blake and Knowles Erecting and Assembling Building	201 Binney St	Cambridge	1903
CAM.1388		39 Bishop Allen Dr	Cambridge	
CAM.1397	Hotel Greyburn	77 Bishop Allen Dr	Cambridge	1891
CAM.577	Young Women's Christian Association Building	146 Bishop Allen Dr	Cambridge	c 1954
CAM.1386	Squirrel Brand Company Building	8 Boardman St	Cambridge	1915
CAM.11	Slowey, Patrick House	73 Bolton St	Cambridge	1852
CAM.1063	Bicycle Exchange Building	3-7 Bow St	Cambridge	1901
CAM.1064		9 Bow St	Cambridge	1884
CAM.1065	Farwell - Russell, Thomas Store	12 Bow St	Cambridge	c 1830

Inv. No.	Property Name	Street	Town	Year
CAM.1066	Westmorly Court - Harvard University	15-29 Bow St	Cambridge	c 1898
CAM.12	Harvard Lampoon Building	44 Bow St	Cambridge	1909
CAM.1067	Randolph Hall - Harvard University	47-57 Bow St	Cambridge	1897
CAM.13	Frost, Elizabeth Tenant House	35 Bowdoin St	Cambridge	1812
CAM.926	Anderson, Larz Bridge	Boylston St	Cambridge	1915
CAM.14	Hicks, John House	64 Boylston St	Cambridge	c 1761
CAM.294	Radcliffe College Graduate Center	Brattle St	Cambridge	1955
CAM.918	Longfellow Park	Brattle St	Cambridge	1887
CAM.987	Lowell Park	Brattle St	Cambridge	
CAM.1068	Brattle Building	4 Brattle St	Cambridge	1913
CAM.1069	Atrium Building	9-11 Brattle St	Cambridge	1979
CAM.1071		12-16 Brattle St	Cambridge	1887
CAM.1070	Estes Block	13-15 Brattle St	Cambridge	1875
CAM.1072	Dow Block	17-35 Brattle St	Cambridge	c 1936
CAM.1073		18 Brattle St	Cambridge	1922
CAM.1074		26 Brattle St	Cambridge	1909
CAM.1075	Hadley Building	28-36 Brattle St	Cambridge	1974
CAM.1076	Cambridge Federal Savings Bank	38A Brattle St	Cambridge	1937
CAM.1077		39-41 Brattle St	Cambridge	1925
CAM.15	Brattle Hall	40 Brattle St	Cambridge	1889
CAM.1078		40A Brattle St	Cambridge	c 1925
CAM.16	Brattle, William House	42 Brattle St	Cambridge	c 1727
CAM.1079	Sage Building	43-45 Brattle St	Cambridge	1926
CAM.1080		44 Brattle St	Cambridge	1970
CAM.1081		46R Brattle St	Cambridge	1966
CAM.1082		47-49 Brattle St	Cambridge	c 1926
CAM.1083	Design Research Building	48 Brattle St	Cambridge	1969
CAM.1084	Washington Court	51 Brattle St	Cambridge	1905
CAM.17	Pratt, Dexter House	54 Brattle St	Cambridge	1808
CAM.1229	Warland, John House	69 Brattle St	Cambridge	1838
CAM.1230	Greenleaf, James House	76 Brattle St	Cambridge	1859
CAM.1228	Chamberlin, John House	77 Brattle St	Cambridge	1821
CAM.18	Radcliffe College Alumnae House	79 Brattle St	Cambridge	1836
CAM.19	Wadsworth Chambers	81-83 Brattle St	Cambridge	1908
CAM.20	Burleigh House	85 Brattle St	Cambridge	1847
CAM.21	Stoughton, Mary Fisk House	90 Brattle St	Cambridge	1882
CAM.22		92 Brattle St	Cambridge	1882
CAM.23	Vassall, Henry House	94 Brattle St	Cambridge	1635

Inv. No.	Property Name	Street	Town	Year
CAM.24	Episcopal Divinity School - Washburn Hall	99 Brattle St	Cambridge	1960
CAM.25	Saint John's Chapel	99 Brattle St	Cambridge	1868
CAM.26	Episcopal Divinity School Library - Sherrill Hall	99 Brattle St	Cambridge	1965
CAM.27	Episcopal Divinity School - Wright Hall	99 Brattle St	Cambridge	1911
CAM.28	Episcopal Divinity School - Reed Hall	99 Brattle St	Cambridge	1873
CAM.29	Episcopal Divinity School - Lawrence Hall	99 Brattle St	Cambridge	1873
CAM.30	Episcopal Divinity School - Burnham Hall	99 Brattle St	Cambridge	1879
CAM.31	Hastings, Oliver House	101 Brattle St	Cambridge	1844
CAM.32	Longfellow National Historic Site	105 Brattle St	Cambridge	c 1759
CAM.33	Dana, Edith Longfellow House	113 Brattle St	Cambridge	1887
CAM.34		114 Brattle St	Cambridge	1903
CAM.35	Thorp, Annie Longfellow House	115 Brattle St	Cambridge	1887
CAM.36	Worcester, Joseph House	121 Brattle St	Cambridge	1843
CAM.37		121A Brattle St	Cambridge	1941
CAM.38		123 Brattle St	Cambridge	
CAM.39		124 Brattle St	Cambridge	1915
CAM.40		125 Brattle St	Cambridge	1939
CAM.41		126 Brattle St	Cambridge	1890
CAM.1235		127 Brattle St	Cambridge	1970
CAM.42		128 Brattle St	Cambridge	1892
CAM.43		130-130R Brattle St	Cambridge	1886
CAM.44		132 Brattle St	Cambridge	1886
CAM.45	Falxa, Dr. Martin House	133 Brattle St	Cambridge	1970
CAM.46		134-136 Brattle St	Cambridge	1857
CAM.47		138 Brattle St	Cambridge	1930
CAM.48		140 Brattle St	Cambridge	1930
CAM.49		142 Brattle St	Cambridge	1915
CAM.50	Cambridge Armenian Church	143 Brattle St	Cambridge	1959
CAM.51		144 Brattle St	Cambridge	1915
CAM.52	Brewster, William House	145 Brattle St	Cambridge	1887
CAM.53		146 Brattle St	Cambridge	1939
CAM.54		147 Brattle St	Cambridge	1887
CAM.55		148 Brattle St	Cambridge	1914
CAM.56	Lechmere, Richard House	149 Brattle St	Cambridge	c 1762
CAM.57		150 Brattle St	Cambridge	1908
CAM.58		152 Brattle St	Cambridge	1887
CAM.59	Lee, Thomas House	153 Brattle St	Cambridge	1803
CAM.60		154 Brattle St	Cambridge	r 1865

Inv. No.	Property Name	Street	Town	Year
CAM.1236		155 Brattle St	Cambridge	1889
CAM.61		156 Brattle St	Cambridge	1867
CAM.62		158 Brattle St	Cambridge	1884
CAM.63	Hooper - Lee - Nichols House	159 Brattle St	Cambridge	c 1685
CAM.64		160 Brattle St	Cambridge	1884
CAM.65		164 Brattle St	Cambridge	1868
CAM.1237	Bartlett, John House	165 Brattle St	Cambridge	1873
CAM.66	Van Brunt, Henry House	167 Brattle St	Cambridge	1883
CAM.67		168 Brattle St	Cambridge	1888
CAM.68	Wells, Judge Daniel House	170 Brattle St	Cambridge	1852
CAM.69		174 Brattle St	Cambridge	1885
CAM.70	Marrett - Ruggles - Fayerweather House	175 Brattle St	Cambridge	r 1765
CAM.1238	Fayerweather House Squash Court and Garage	177 Brattle St	Cambridge	1915
CAM.71		180 Brattle St	Cambridge	1888
CAM.72	Richards, R. A. House	182 Brattle St	Cambridge	1895
CAM.73		190 Brattle St	Cambridge	1898
CAM.74	Frankfurter, Justice Felix House	192 Brattle St	Cambridge	1907
CAM.75		193 Brattle St	Cambridge	1893
CAM.76		194 Brattle St	Cambridge	1917
CAM.77		195 Brattle St	Cambridge	1896
CAM.78		198 Brattle St	Cambridge	1912
CAM.79	Stubbins, Hugh House	199 Brattle St	Cambridge	1966
CAM.80		200 Brattle St	Cambridge	1901
CAM.81		202 Brattle St	Cambridge	1903
CAM.82		205 Brattle St	Cambridge	r 1925
CAM.83		209 Brattle St	Cambridge	r 1925
CAM.84		213-215 Brattle St	Cambridge	1896
CAM.85	Frost, Robert House	29-35 Brewster St	Cambridge	1884
CAM.1402	Volpe Center - Auditorium	33 Broadway	Cambridge	c 1965
CAM.1409	Close, George Candy Manufacturing Company Building	243 Broadway	Cambridge	1910
CAM.86	Cambridge Public Library	449 Broadway	Cambridge	1888
CAM.515		301 Brookline Ave	Cambridge	1869
CAM.516		302 Brookline Ave	Cambridge	1887
CAM.517		308 Brookline Ave	Cambridge	1870
CAM.623	Southwick Block	11-19 Brookline St	Cambridge	1911
CAM.88	Brown, Daniel House	7 Brown St	Cambridge	1845
CAM.89	Hill, Aaron House	17 Brown St	Cambridge	c 1754

Inv. No.	Property Name	Street	Town	Year
CAM.708		1 Bryant St	Cambridge	1911
CAM.709		5 Bryant St	Cambridge	1916
CAM.710		7 Bryant St	Cambridge	1915
CAM.711		20-24 Bryant St	Cambridge	1916
CAM.712		21 Bryant St	Cambridge	1932
CAM.90	Bridgman, Percy House	10 Buckingham Pl	Cambridge	c 1920
CAM.91	Koch, Carl House	4 Buckingham St	Cambridge	1939
CAM.92	Higginson, Col. Thomas Wentworth House	29 Buckingham St	Cambridge	1880
CAM.941	Bridge, John Statue	Cambridge Common	Cambridge	1882
CAM.942	Memorial Gateway	Cambridge Common	Cambridge	1906
CAM.943	Revolutionary War Cannons	Cambridge Common	Cambridge	c 1770
CAM.944	Soldiers Monument	Cambridge Common	Cambridge	1869
CAM.906	Cambridge Parkway Bridge over Broad Canal	Cambridge Pkwy	Cambridge	1957
CAM.931	Cambridge Parkway	Cambridge Pkwy	Cambridge	1900
CAM.97	Memorial Hall	Cambridge St	Cambridge	r 1875
CAM.379	Middlesex County Registry of Deeds Building	Cambridge St	Cambridge	1896
CAM.380	Middlesex County Clerk of Courts Building	Cambridge St	Cambridge	1889
CAM.912	Longfellow Bridge - West Boston Bridge	Cambridge St	Cambridge	c 1907
CAM.914	Lechmere Square Streetcar Station	Cambridge St	Cambridge	1922
CAM.372		82-84 Cambridge St	Cambridge	1937
CAM.373	Davenport, A. H. - Irving and Casson Company	88-134 Cambridge St	Cambridge	1866
CAM.378		160 Cambridge St	Cambridge	1965
CAM.93	East Cambridge Savings Bank	292 Cambridge St	Cambridge	1931
CAM.94	Union Railway Car Barn	613-621 Cambridge St	Cambridge	1869
CAM.535		1353-1369 Cambridge St	Cambridge	1894
CAM.532	Waite Building	1368 Cambridge St	Cambridge	1855
CAM.533	Middlesex Bank Building	1374-1385 Cambridge St	Cambridge	1874
CAM.95		1707-1709 Cambridge St	Cambridge	1845
CAM.96		1715-1717 Cambridge St	Cambridge	1845
CAM.635	Holmes Block II - Green Block	2-14 Central Sq	Cambridge	1798
CAM.636	Home Realty Building	14 Central Sq	Cambridge	1970
CAM.639	Southwick Building I	15-16 Central Sq	Cambridge	1896
CAM.640	Southwick Building II	17-24 Central Sq	Cambridge	c 1860
CAM.641	White Tower Restaurant	25 Central Sq	Cambridge	1932
CAM.98	Melvin, Isaac House	19 Centre St	Cambridge	1842
CAM.99	Boston and Maine Railroad Signal Tower A	Charles River	Cambridge	1931
CAM.911	Charles River Railroad Draw Bridge #1	Charles River	Cambridge	1931
CAM.920	Charles River Dam	Charles River	Cambridge	r 1905

Inv. No.	Property Name	Street	Town	Year
CAM.925	Weeks, John Wingate Foot Bridge	Charles River	Cambridge	1927
CAM.928	Lechmere Canal	Charles River	Cambridge	1909
CAM.929	Broad Canal	Charles River	Cambridge	1805
CAM.932	Charles River Basin Granite Seawall and Iron Fence	Charles River	Cambridge	
CAM.935	Metropolitan District Commission Swimming Pool	Charles River	Cambridge	
CAM.1320	Metropolitan District Commission Clorination Plant	Charles River	Cambridge	
CAM.1325	M. I. T. - Pierce, Harold Whitworth Boat House	Charles River	Cambridge	1965
CAM.1326	M. I. T. - Wood, Walter C. Sailing Pavilion	Charles River	Cambridge	1976
CAM.1328	Riverside Boat Club	Charles River	Cambridge	r 1910
CAM.543	Boardman, James Double House	Cherry St	Cambridge	1843
CAM.100	Fuller, Margaret House	71 Cherry St	Cambridge	1806
CAM.546		87 Cherry St	Cambridge	c 1845
CAM.545		116-120 Cherry St	Cambridge	c 1845
CAM.544	Eaton, Jacob House	128 Cherry St	Cambridge	c 1844
CAM.542		137-139 Cherry St	Cambridge	c 1840
CAM.537		149-151 Cherry St	Cambridge	c 1830
CAM.538		159-161 Cherry St	Cambridge	c 1830
CAM.547		167 Cherry St	Cambridge	1850
CAM.548		169 Cherry St	Cambridge	1850
CAM.101	Kingsley, Chester House	10 Chester St	Cambridge	1866
CAM.518		105 Chestnut St	Cambridge	1875
CAM.519		111 Chestnut St	Cambridge	1875
CAM.102	First Parish Church, Unitarian	1-3 Church St	Cambridge	1833
CAM.103		23-25 Church St	Cambridge	1936
CAM.1085		26-28 Church St	Cambridge	1857
CAM.104		27-29 Church St	Cambridge	1922
CAM.105	Cambridge Police Station	31-33 Church St	Cambridge	1864
CAM.1086	Oxford Grill	32-42 Church St	Cambridge	1931
CAM.1087	Hancock - Torrey House	53 Church St	Cambridge	1827
CAM.1088		54-56 Church St	Cambridge	1925
CAM.1089		59-63 Church St	Cambridge	1949
CAM.1377	Cambridge Almshouse Caretaker's House	36 Churchill Ave	Cambridge	c 1886
CAM.106	Gale, George House	14-16 Clinton St	Cambridge	c 1853
CAM.1387		41-43 Columbia St	Cambridge	
CAM.107	Beth Israel Synagogue	238 Columbia St	Cambridge	1901
CAM.908	Commercial Avenue Bridge over Lechmere Canal	Commercial Ave	Cambridge	1907

Inv. No.	Property Name	Street	Town	Year
CAM.1318	Metropolitan District Commission Stables	Commercial Ave	Cambridge	
CAM.336		3 Concord Ave	Cambridge	1915
CAM.337		5 Concord Ave	Cambridge	c 1917
CAM.108	Howells, William Dean House	37 Concord Ave	Cambridge	1873
CAM.1365	Cambridge Home for the Aged and Infirm	650 Concord Ave	Cambridge	1928
CAM.111	Holmes, Joseph House	144 Coolidge Hill	Cambridge	1801
CAM.109	Orne, Sarah House	10 Coolidge Hill Rd	Cambridge	1807
CAM.110	Coolidge, Josiah House	24 Coolidge Hill Rd	Cambridge	c 1822
CAM.600	Coolidge, Flavel House	2 Coolidge Pl	Cambridge	1834
CAM.1369	Blessed Sacrament Roman Catholic Parish School	12 Corporal McTernan St	Cambridge	1924
CAM.112	Valentine Soap Workers' Cottage	5-7 Cottage St	Cambridge	1835
CAM.1212	Mather House - Harvard University	Cowperthwaite St	Cambridge	1967
CAM.113	Birkhoff, George D. House	22 Craigie St	Cambridge	r 1870
CAM.114	Ross, Denman House	24-26 Craigie St	Cambridge	1869
CAM.115		25 Craigie St	Cambridge	1856
CAM.116	Horsford, Eben House	27 Craigie St	Cambridge	1854
CAM.333	Day, Anna House	139 Cushing St	Cambridge	1856
CAM.117	Colburn, Sara Foster House	7 Dana St	Cambridge	1841
CAM.118	University Museum	11-25 Divinity Ave	Cambridge	1859
CAM.119	Divinity Hall	12 Divinity Ave	Cambridge	1825
CAM.120	Biological Laboratory	16 Divinity Ave	Cambridge	1930
CAM.121	Second Cambridge Savings Bank Building	11-21 Dunster St	Cambridge	1897
CAM.1090	Union Railway Carbarn	25-33 Dunster St	Cambridge	1860
CAM.1091	Second D. U. Club	45 Dunster St	Cambridge	1930
CAM.1092	Metcalf, Eliab Wight House	46 Dunster St	Cambridge	1820
CAM.1093	Edwards, Abraham - Moore, Mary House	53 Dunster St	Cambridge	1841
CAM.1094	Alpha Sigma Phi Club	54 Dunster St	Cambridge	1900
CAM.122	Wyeth, Augustus House	69 Dunster St	Cambridge	1829
CAM.1095		71-77 Dunster St	Cambridge	1894
CAM.123		42 Edward J. Lopez Ave	Cambridge	c 1830
CAM.1096	Hotel Packard	10-14 Eliot St	Cambridge	1869
CAM.1097		14A Eliot St	Cambridge	1900
CAM.1098		16-18 Eliot St	Cambridge	1898
CAM.124	Sands, Ivory House	145 Elm St	Cambridge	1839
CAM.125	Foster, Dr. House	8 Elmwood Ave	Cambridge	1893
CAM.126	Greenough, J. J. House	9 Elmwood Ave	Cambridge	1903
CAM.127	Smyth, Herbert House	11-15 Elmwood Ave	Cambridge	1903

Inv. No.	Property Name	Street	Town	Year
CAM.128	Kempton, John House	14 Elmwood Ave	Cambridge	1895
CAM.129		20 Elmwood Ave	Cambridge	1892
CAM.130	Benson, Ruth House	26 Elmwood Ave	Cambridge	1899
CAM.131	Watson House	30 Elmwood Ave	Cambridge	c 1750
CAM.132	Elmwood - Lowell, James Russell House	33 Elmwood Ave	Cambridge	c 1767
CAM.133	Reardon, Edmund House	195 Erie St	Cambridge	1884
CAM.1371	Blessed Sacrament Roman Catholic Church Convent	203 Erie St	Cambridge	1954
CAM.134	Harvard Graduate Center	10-26 Everett St	Cambridge	1949
CAM.135	Jarvis, The	27 Everett St	Cambridge	1890
CAM.136	Newman, Andrew House	23 Fairmont St	Cambridge	1823
CAM.713		2-4 Farrar St	Cambridge	1927
CAM.714		9 Farrar St	Cambridge	1890
CAM.715		15 Farrar St	Cambridge	1898
CAM.716		16 Farrar St	Cambridge	1931
CAM.717		17 Farrar St	Cambridge	1897
CAM.718		18-20 Farrar St	Cambridge	1923
CAM.719		22 Farrar St	Cambridge	1928
CAM.720		26 Farrar St	Cambridge	1928
CAM.137		10-12 Farwell Pl	Cambridge	r 1870
CAM.138	Nichols House	11 Farwell Pl	Cambridge	1827
CAM.139		14-16 Farwell Pl	Cambridge	c 1855
CAM.140	Read, James House	15 Farwell Pl	Cambridge	c 1772
CAM.141	Child, N. K. House	17 Farwell Pl	Cambridge	1835
CAM.142		18-20 Farwell Pl	Cambridge	c 1855
CAM.143	Christ Church Parish House	19 Farwell Pl	Cambridge	1948
CAM.144	Toppan House	22-24 Farwell Pl	Cambridge	c 1900
CAM.1408	Carey, Agnes Whiteside House	50 Fayerweather St	Cambridge	
CAM.145	Deane, Ezra - Williams, George House	21-23 Fayette St	Cambridge	1848
CAM.146		26-28 Fayette St	Cambridge	1857
CAM.430	Cambridge Public Library - O'Connell Branch	Fifth St	Cambridge	1938
CAM.441		69-71 Fifth St	Cambridge	
CAM.452	Hall, Jesse House	75 Fifth St	Cambridge	1837
CAM.428		82 Fifth St	Cambridge	
CAM.429		83 Fifth St	Cambridge	
CAM.1405	Volpe Center - Center Service Building	259 Fifth St	Cambridge	c 1965
CAM.907	First Street Bridge over Broad Canal	First St	Cambridge	1924
CAM.147	Athenaeum Press Building	215 First St	Cambridge	1895

Inv. No.	Property Name	Street	Town	Year
CAM.910	Fitchburg Railroad Signal Bridge	Fitchburg Railroad	Cambridge	c 1930
CAM.148	Abbot, Edwin House	1 Follen St	Cambridge	1889
CAM.1271		5 Follen St	Cambridge	1853
CAM.1273		6 Follen St	Cambridge	1868
CAM.1338		8 Follen St	Cambridge	1871
CAM.149	Second Waterhouse House	9 Follen St	Cambridge	1844
CAM.150		10 Follen St	Cambridge	1875
CAM.1274		13 Follen St	Cambridge	1900
CAM.151	Richards, Theodore W. House	15 Follen St	Cambridge	1900
CAM.1275		19 Follen St	Cambridge	1844
CAM.1276		20 Follen St	Cambridge	1949
CAM.1277		21 Follen St	Cambridge	1841
CAM.1278		22 Follen St	Cambridge	1951
CAM.1279		25 Follen St	Cambridge	1889
CAM.152	Clover Den - Mann, Mary House	29 Follen St	Cambridge	1837
CAM.1280		34 Follen St	Cambridge	1946
CAM.1281		36 Follen St	Cambridge	1847
CAM.1282		44 Follen St	Cambridge	1862
CAM.338	Puritan Arms	46-50 Follen St	Cambridge	1940
CAM.1331	Homer - Lovell House	11 Forest St	Cambridge	1867
CAM.153	Francis, Ebenezer Houuse	1 Francis Ave	Cambridge	1836
CAM.721		6 Francis Ave	Cambridge	1940
CAM.722		7 Francis Ave	Cambridge	1894
CAM.723		8 Francis Ave	Cambridge	1940
CAM.724		9 Francis Ave	Cambridge	c 1875
CAM.725		10 Francis Ave	Cambridge	1894
CAM.726		11 Francis Ave	Cambridge	1894
CAM.1337		12-14 Francis Ave	Cambridge	1895
CAM.727		16 Francis Ave	Cambridge	1906
CAM.154	Davis, William Morris House	17 Francis Ave	Cambridge	r 1895
CAM.728		18 Francis Ave	Cambridge	1911
CAM.155	Hyatt, Prof. Alpheus - Durant, Prof. Will B. House	19 Francis Ave	Cambridge	1889
CAM.729		21 Francis Ave	Cambridge	1925
CAM.730		22 Francis Ave	Cambridge	1912
CAM.731		23 Francis Ave	Cambridge	1902
CAM.732		24 Francis Ave	Cambridge	1906
CAM.733		30 Francis Ave	Cambridge	1905
CAM.734		32 Francis Ave	Cambridge	1903

Inv. No.	Property Name	Street	Town	Year
CAM.735	Center for the Study of World Religions	42 Francis Ave	Cambridge	1959
CAM.736		44 Francis Ave	Cambridge	1913
CAM.737		53 Francis Ave	Cambridge	1913
CAM.738		56 Francis Ave	Cambridge	1914
CAM.739		57 Francis Ave	Cambridge	1913
CAM.740		59 Francis Ave	Cambridge	1916
CAM.741		60 Francis Ave	Cambridge	1961
CAM.742		63 Francis Ave	Cambridge	1913
CAM.743	Sert, Jose Luis House	64 Francis Ave	Cambridge	1957
CAM.744		65 Francis Ave	Cambridge	1916
CAM.745		67 Francis Ave	Cambridge	1926
CAM.746		68 Francis Ave	Cambridge	1921
CAM.747		70 Francis Ave	Cambridge	1879
CAM.748		73 Francis Ave	Cambridge	1926
CAM.749		75-77 Francis Ave	Cambridge	1925
CAM.1329	Kennedy, F. A. Steam Bakery	129 Franklin St	Cambridge	1875
CAM.919	Fresh Pond Lane over B & M Railroad	Fresh Pond Ln	Cambridge	1926
CAM.9014	Fresh Pond Parkway	Fresh Pond Pkwy	Cambridge	1899
CAM.9015	Fresh Pond Parkway - Concord Avenue Rotary Islands	Fresh Pond Pkwy	Cambridge	1928
CAM.9016	Fresh Pond Parkway - New Street Rotary	Fresh Pond Pkwy	Cambridge	1928
CAM.9017	Fresh Pond Parkway Tree Canopy	Fresh Pond Pkwy	Cambridge	r 1920
CAM.9018	Fresh Pond Parkway Median System	Fresh Pond Pkwy	Cambridge	c 1958
CAM.156	Wyeth - Eliot, Charles House	17 Fresh Pond Pkwy	Cambridge	1838
CAM.157	Frost, Walter House	10 Frost St	Cambridge	1807
CAM.800	Old Burying Ground	Garden St	Cambridge	r 1750
CAM.940	Milestone, 1767	Garden St	Cambridge	1734
CAM.158	Christ Church	0 Garden St	Cambridge	1760
CAM.159	Saunders, William House	1 Garden St	Cambridge	1821
CAM.339		2 Garden St	Cambridge	1835
CAM.340	Howe, Sarah House	3 Garden St	Cambridge	1851
CAM.160	First Church in Cambridge Congregational	11 Garden St	Cambridge	1870
CAM.341		17-19 Garden St	Cambridge	1926
CAM.161	Sears Tower - Harvard Observatory	60 Garden St	Cambridge	1843
CAM.162	Warner House	63 Garden St	Cambridge	1855
CAM.163	Gray, Asa House	88 Garden St	Cambridge	1810
CAM.1240		91 Garden St	Cambridge	1922
CAM.164	Taylor Square Firehouse	113 Garden St	Cambridge	1904

Inv. No.	Property Name	Street	Town	Year
CAM.165	Warren, H. Langford House	6 Garden Terr	Cambridge	1904
CAM.671	Rollins, John House	16 Garfield St	Cambridge	1891
CAM.672	Wood, Edward House	18 Garfield St	Cambridge	1886
CAM.1336	Shepherd, Herbert House	31-33 Garfield St	Cambridge	1886
CAM.673	Farquhar, Robert House	34 Garfield St	Cambridge	1890
CAM.674	Coon, Sarah House	36 Garfield St	Cambridge	1887
CAM.666	Shepherd, Edward House	39 Garfield St	Cambridge	1885
CAM.675	Thayer, Bertha House	44 Garfield St	Cambridge	1888
CAM.667	Estabrook, J. W. House	45 Garfield St	Cambridge	1886
CAM.668	Bartlett, A. S. House	49 Garfield St	Cambridge	1888
CAM.676	Green, Roscoe House	54 Garfield St	Cambridge	1890
CAM.669	Dewey House	55 Garfield St	Cambridge	1889
CAM.677	Worcester, George House	58 Garfield St	Cambridge	1890
CAM.678	Allen, Frank House	64 Garfield St	Cambridge	1891
CAM.670	Sullivan, Cornelius House	67 Garfield St	Cambridge	1889
CAM.679	Farnsworth, Charles House	74 Garfield St	Cambridge	1897
CAM.680	Ball, Elijah House	80 Garfield St	Cambridge	1887
CAM.502	Lechmere Point Corporation Row House	47 Gore St	Cambridge	c 1821
CAM.503	Lechmere Point Corporation Row House	49 Gore St	Cambridge	c 1821
CAM.504	Lechmere Point Corporation Row House	51 Gore St	Cambridge	c 1821
CAM.1407	Carr, M. W. and Company Factory - Building #4	63 Gorham St	Cambridge	r 1920
CAM.1241		1 Gray Gardens East	Cambridge	1925
CAM.1242		2 Gray Gardens East	Cambridge	1930
CAM.1243		3 Gray Gardens East	Cambridge	1923
CAM.1244		8 Gray Gardens East	Cambridge	1923
CAM.1245		9 Gray Gardens East	Cambridge	1922
CAM.1246		11 Gray Gardens East	Cambridge	1924
CAM.1247		12 Gray Gardens East	Cambridge	1922
CAM.1248		13 Gray Gardens East	Cambridge	1925
CAM.1249		16 Gray Gardens East	Cambridge	1922
CAM.1250		17 Gray Gardens East	Cambridge	1958
CAM.1251		19 Gray Gardens East	Cambridge	1927
CAM.1252		22 Gray Gardens East	Cambridge	1962
CAM.1253		25 Gray Gardens East	Cambridge	1926
CAM.1254		26 Gray Gardens East	Cambridge	1922
CAM.1255		27 Gray Gardens East	Cambridge	1923
CAM.1256		30 Gray Gardens East	Cambridge	1928
CAM.1257		31 Gray Gardens East	Cambridge	1924

Inv. No.	Property Name	Street	Town	Year
CAM.1258		37 Gray Gardens East	Cambridge	1923
CAM.1259		3 Gray Gardens West	Cambridge	1923
CAM.1260		4 Gray Gardens West	Cambridge	1922
CAM.1261		11 Gray Gardens West	Cambridge	1923
CAM.1262		14 Gray Gardens West	Cambridge	1924
CAM.1263		15 Gray Gardens West	Cambridge	1929
CAM.1264		16 Gray Gardens West	Cambridge	1925
CAM.167	Hall Tavern	20 Gray Gardens West	Cambridge	r 1800
CAM.1265		24 Gray Gardens West	Cambridge	1928
CAM.166	Frost, David House	26 Gray St	Cambridge	1815
CAM.618		133 Green St	Cambridge	c 1894
CAM.624	Raymond, T. H. Warehouse	175 Green St	Cambridge	1908
CAM.1389		205-207 Green St	Cambridge	
CAM.534	Inman Square Fire Station	Hampshire St	Cambridge	1912
CAM.168	Lamson, Rufus House	72-74 Hampshire St	Cambridge	1854
CAM.1367	Massachusetts Avenue Baptist Church	146 Hampshire St	Cambridge	1902
CAM.169	Opposition House	2-4 Hancock Pl	Cambridge	1807
CAM.170		104-106 Hancock St	Cambridge	1839
CAM.171	Atwood, Ephraim House	110 Hancock St	Cambridge	1839
CAM.536	Fay, Samuel P. P. House	172 Harvard St	Cambridge	1805
CAM.549	Allen Block	177-183 Harvard St	Cambridge	r 1875
CAM.1354	Courtney, Benjamin House	273 Harvard St	Cambridge	1867
CAM.172	Jones, William R. House	307 Harvard St	Cambridge	1865
CAM.173	Vinal, Albert House	325 Harvard St	Cambridge	1853
CAM.681	Melledge, James P. House	335 Harvard St	Cambridge	1850
CAM.684	Warner, Caleb House	336 Harvard St	Cambridge	1858
CAM.682		337 Harvard St	Cambridge	1887
CAM.685	Frothingham, Amos House	338 Harvard St	Cambridge	1859
CAM.686	Goepper, William House	340 Harvard St	Cambridge	1897
CAM.683		341-343 Harvard St	Cambridge	1855
CAM.687	Rindge, Samuel Baker House	342-344 Harvard St	Cambridge	1857
CAM.174	Bradbury, William F. House	369 Harvard St	Cambridge	1877
CAM.175	Hapgood, Richard House	382-392 Harvard St	Cambridge	1889
CAM.176	Ware Hall	383 Harvard St	Cambridge	1893
CAM.1099	Delta Upsilon Club	396 Harvard St	Cambridge	1914
CAM.177	Old Cambridge Baptist Church	398 Harvard St	Cambridge	1867
CAM.193	Austin Hall	Harvard University	Cambridge	1881
CAM.178	Holden Chapel - Harvard University	Harvard Yard	Cambridge	1764

Inv. No.	Property Name	Street	Town	Year
CAM.179	Sever Hall	Harvard Yard	Cambridge	1880
CAM.180	University Hall	Harvard Yard	Cambridge	1812
CAM.181	Harvard Hall - Harvard University	Harvard Yard	Cambridge	1764
CAM.182	Hollis Hall - Harvard University	Harvard Yard	Cambridge	1762
CAM.183	Massachusetts Hall	Harvard Yard	Cambridge	1718
CAM.184	Weld Hall - Harvard University	Harvard Yard	Cambridge	1870
CAM.185	Boylston Hall - Harvard University	Harvard Yard	Cambridge	1857
CAM.186	Holworthy Hall - Harvard University	Harvard Yard	Cambridge	1811
CAM.187	Grays Hall - Harvard University	Harvard Yard	Cambridge	1862
CAM.188	Lehman Hall - Harvard University	Harvard Yard	Cambridge	1924
CAM.189	Matthews House - Harvard University	Harvard Yard	Cambridge	1871
CAM.190	Straus Hall - Harvard University	Harvard Yard	Cambridge	1926
CAM.191	Thayer Hall - Harvard University	Harvard Yard	Cambridge	1869
CAM.192	Wigglesworth Hall - Harvard University	Harvard Yard	Cambridge	1930
CAM.953	Harvard University - 1857 Gate	Harvard Yard	Cambridge	1901
CAM.954	Harvard University - 1870 Gate	Harvard Yard	Cambridge	1901
CAM.955	Harvard University - 1873 Tablet	Harvard Yard	Cambridge	1901
CAM.956	Harvard University - 1874 Gate	Harvard Yard	Cambridge	1901
CAM.957	Harvard University - 1875 Gate	Harvard Yard	Cambridge	1901
CAM.958	Harvard University - 1881 Gate	Harvard Yard	Cambridge	1906
CAM.959	Harvard University - 1885 Gate	Harvard Yard	Cambridge	1904
CAM.960	Harvard University - 1886 Gate	Harvard Yard	Cambridge	1901
CAM.961	Harvard University - 1887 Gate	Harvard Yard	Cambridge	1906
CAM.962	Harvard University - 1888 Gate	Harvard Yard	Cambridge	1906
CAM.963	Harvard University - 1889 Gate	Harvard Yard	Cambridge	1901
CAM.964	Harvard University - 1890 Gate	Harvard Yard	Cambridge	1901
CAM.965	Harvard University - 1880 Gate	Harvard Yard	Cambridge	1902
CAM.966	Harvard University - Bradley Fountain	Harvard Yard	Cambridge	1910
CAM.967	Harvard University - Chinese Steel	Harvard Yard	Cambridge	r 1810
CAM.968	Harvard University - Delivery Gate	Harvard Yard	Cambridge	1948
CAM.969	Harvard University - Driveway Gate	Harvard Yard	Cambridge	1948
CAM.970	Harvard University - 1908 Gate	Harvard Yard	Cambridge	1936
CAM.971	Harvard University - Emerson Gate	Harvard Yard	Cambridge	1936
CAM.972	Harvard University - Fire Station Gate	Harvard Yard	Cambridge	1970
CAM.973	Harvard University - Hollis Pump	Harvard Yard	Cambridge	1936
CAM.974	Harvard University - 1876 Gate	Harvard Yard	Cambridge	1901
CAM.975	Harvard University - Harvard, John Statue	Harvard Yard	Cambridge	1884
CAM.976	Harvard University - Johnston Gate	Harvard Yard	Cambridge	1889

Inv. No.	Property Name	Street	Town	Year
CAM.977	Harvard University - Lamont Gate	Harvard Yard	Cambridge	1948
CAM.978	Harvard University - Gatehouse	Harvard Yard	Cambridge	1983
CAM.979	Harvard University - 1879 Gate	Harvard Yard	Cambridge	1891
CAM.980	Harvard University - Onion	Harvard Yard	Cambridge	1965
CAM.981	Harvard University - Porcellian Gate	Harvard Yard	Cambridge	1901
CAM.982	Harvard University - Reclining Figure	Harvard Yard	Cambridge	1972
CAM.983	Harvard University - Robinson Gate	Harvard Yard	Cambridge	1936
CAM.984	Harvard University - 1870 Sundial	Harvard Yard	Cambridge	1901
CAM.985	Harvard University - 1877 Gate	Harvard Yard	Cambridge	1901
CAM.1214	Harvard University - Canaday Hall	Harvard Yard	Cambridge	1973
CAM.1215	Harvard University - Emerson Hall	Harvard Yard	Cambridge	1904
CAM.1216	Harvard University - Houghton Library	Harvard Yard	Cambridge	1941
CAM.1217	Harvard University - Lamont Library	Harvard Yard	Cambridge	1947
CAM.1218	Harvard University - Lionel Hall	Harvard Yard	Cambridge	1924
CAM.1219	Harvard University - Memorial Church	Harvard Yard	Cambridge	1931
CAM.1220	Harvard University - Mower Hall	Harvard Yard	Cambridge	1924
CAM.1221	Brooks, Phillips House - Harvard Univsersity	Harvard Yard	Cambridge	1898
CAM.1222	Harvard University - Pusey Library	Harvard Yard	Cambridge	1973
CAM.1223	Harvard University - Robinson Hall	Harvard Yard	Cambridge	1900
CAM.1224	Harvard University - Stoughton Hall	Harvard Yard	Cambridge	1804
CAM.1227	Harvard University - Widener Library	Harvard Yard	Cambridge	1913
CAM.520		6 Hastings Sq	Cambridge	1884
CAM.1231	Bates, Jacob H. House	11 Hawthorn St	Cambridge	1813
CAM.194	Daly, Reginald A. House	23 Hawthorn St	Cambridge	c 1885
CAM.195	Wadsworth House	31 Hawthorn St	Cambridge	r 1935
CAM.196		35 Hawthorn St	Cambridge	r 1935
CAM.197	Glaser, Dorothy Merriless House	37 Hawthorn St	Cambridge	1937
CAM.198		41 Hawthorn St	Cambridge	1911
CAM.199	Maynardier, G. B. House	43 Hawthorn St	Cambridge	1900
CAM.1232		49 Hawthorn St	Cambridge	1900
CAM.521		75 Henry St	Cambridge	1892
CAM.1343		82-84 Henry St	Cambridge	
CAM.200	Noyes, J. A. House	1 Highland St	Cambridge	1894
CAM.796	Usher, Samuel House	11 Hillside Ave	Cambridge	1887
CAM.750		11 Holden St	Cambridge	1928
CAM.751		41 Holden St	Cambridge	1840
CAM.752		45 Holden St	Cambridge	1928
CAM.1383	Chadwick, Samuel E. House	10 Hollis St	Cambridge	1853

Inv. No.	Property Name	Street	Town	Year
CAM.1100	Alpha Delta Phi Club - Fly Club	2 Holyoke Pl	Cambridge	1896
CAM.1101		9 Holyoke Pl	Cambridge	c 1930
CAM.1197	Lowell House - Harvard University	10 Holyoke Pl	Cambridge	1929
CAM.1198	Indoor Athletic Building - Harvard University	35-41 Holyoke Pl	Cambridge	1929
CAM.1102		8-10 Holyoke St	Cambridge	1927
CAM.201	Hasty Pudding Club	12 Holyoke St	Cambridge	1887
CAM.1103	Apley Court	16 Holyoke St	Cambridge	1897
CAM.1104	Sawyer, Samuel F. House	20 Holyoke St	Cambridge	1818
CAM.1105		22 Holyoke St	Cambridge	1956
CAM.1106		24 Holyoke St	Cambridge	1963
CAM.1107	Owl Club	30 Holyoke St	Cambridge	1905
CAM.1302		2 Hubbard Pk	Cambridge	1909
CAM.1293		3 Hubbard Pk	Cambridge	1887
CAM.1306	Warren, John L. House	5 Hubbard Pk	Cambridge	1922
CAM.1305	Paine, George House	6 Hubbard Pk	Cambridge	c 1918
CAM.1295		8 Hubbard Pk	Cambridge	1888
CAM.1301	Nutting, Lillian House	12 Hubbard Pk	Cambridge	1908
CAM.1297		14 Hubbard Pk	Cambridge	1892
CAM.1304		15 Hubbard Pk	Cambridge	1914
CAM.1303	Beach, Revel W. House	19 Hubbard Pk	Cambridge	1913
CAM.1298		20 Hubbard Pk	Cambridge	1892
CAM.1299		26 Hubbard Pk	Cambridge	1894
CAM.1296		32 Hubbard Pk	Cambridge	1890
CAM.1346		15 Humboldt St	Cambridge	
CAM.904	Huron Avenue Bridge over B & M Railroad	Huron Ave	Cambridge	1892
CAM.202	Syrian Orthodox Catholic Church of Saint Mary	8 Inman St	Cambridge	1822
CAM.576	Matthews Apartments	12 Inman St	Cambridge	1966
CAM.1364	Bennett, James House	17 Inman St	Cambridge	1871
CAM.1349	Luke Rowhouse	19 Inman St	Cambridge	1877
CAM.1350	Luke Rowhouse	21 Inman St	Cambridge	1877
CAM.1351	Luke Rowhouse	21 1/2 Inman St	Cambridge	1877
CAM.203		102-104 Inman St	Cambridge	1845
CAM.204		106-108 Inman St	Cambridge	1845
CAM.205		110-112 Inman St	Cambridge	1845
CAM.753		80-82 Irving St	Cambridge	1927
CAM.754		81 Irving St	Cambridge	1916
CAM.755		84-86 Irving St	Cambridge	1927
CAM.756		89 Irving St	Cambridge	1916

Inv. No.	Property Name	Street	Town	Year
CAM.206	James, William House	95 Irving St	Cambridge	1889
CAM.757		99 Irving St	Cambridge	1889
CAM.758		103-103A Irving St	Cambridge	1889
CAM.207	cummings, e. e. House	104 Irving St	Cambridge	1893
CAM.759	Van Dael - DeSola Pool House	105 Irving St	Cambridge	1890
CAM.760		107 Irving St	Cambridge	1891
CAM.761		109 Irving St	Cambridge	1893
CAM.762	Davis, Robert House	110 Irving St	Cambridge	1889
CAM.763		114 Irving St	Cambridge	1911
CAM.764		133 Irving St	Cambridge	1963
CAM.765	American Academy of Arts and Sciences	136 Irving St	Cambridge	1980
CAM.766		138 Irving St	Cambridge	1912
CAM.297	Radcliffe College - Schlesinger Library	James St	Cambridge	1907
CAM.950	Winthrop Square Park	Kennedy St	Cambridge	1631
CAM.1108	Abbott Building	5 Kennedy St	Cambridge	1908
CAM.1109		9-25 Kennedy St	Cambridge	1887
CAM.1110	Farwell, Levi Tenant House	10-14 Kennedy St	Cambridge	c 1820
CAM.1111	Read Block	18-28 Kennedy St	Cambridge	1885
CAM.1112		29-41 Kennedy St	Cambridge	1971
CAM.1113		30 Kennedy St	Cambridge	1936
CAM.1114	Garage, The	34-42 Kennedy St	Cambridge	1924
CAM.1115	Fox Club	44 Kennedy St	Cambridge	1906
CAM.1116	Drayton Hall	48 Kennedy St	Cambridge	1901
CAM.1117		50 Kennedy St	Cambridge	1892
CAM.1118		52-54 Kennedy St	Cambridge	1884
CAM.1119	Galeria	55-57 Kennedy St	Cambridge	1974
CAM.1120		56 Kennedy St	Cambridge	1903
CAM.1121	S. A. E. Club	60 Kennedy St	Cambridge	1929
CAM.1122		63-65 Kennedy St	Cambridge	1984
CAM.1200	Hicks, John House - Harvard University	64 Kennedy St	Cambridge	1762
CAM.1199	Smith Hall - Harvard University	70-78 Kennedy St	Cambridge	1913
CAM.208	Loring, Judge Edward - Peirce, Benjamin House	4 Kirkland Pl	Cambridge	1856
CAM.688	Merrill, John House	9 Kirkland Pl	Cambridge	1855
CAM.689	Shaw, Southworth House	10 Kirkland Pl	Cambridge	1856
CAM.690	Green, Louise House	11 Kirkland Pl	Cambridge	1921
CAM.691	Cutler, Isaac House	12 Kirkland Pl	Cambridge	1857
CAM.692	Cutler, George House	13 Kirkland Pl	Cambridge	1857
CAM.693	Ware House	14 Kirkland Pl	Cambridge	1839

Inv. No.	Property Name	Street	Town	Year
CAM.209	Treadwell - Sparks House	21 Kirkland St	Cambridge	1838
CAM.210	Brooks, Luther House	34 Kirkland St	Cambridge	1840
CAM.211	Lovering, Joseph House	38 Kirkland St	Cambridge	1839
CAM.767		49 Kirkland St	Cambridge	1886
CAM.768		55 Kirkland St	Cambridge	1927
CAM.769		57-59 Kirkland St	Cambridge	1927
CAM.212	Eliot, Charles W. House	61 Kirkland St	Cambridge	1858
CAM.213	Child, Francis J. House	67 Kirkland St	Cambridge	1861
CAM.9019	Brown-Rhone, Jill Park	Lafayette Sq	Cambridge	2007
CAM.214	Fresh Pond Hotel	234 Lakeview Ave	Cambridge	1796
CAM.1013		13 Lancaster St	Cambridge	c 1880
CAM.1005		16 Lancaster St	Cambridge	1892
CAM.1006		18 Lancaster St	Cambridge	1885
CAM.1007		24 Lancaster St	Cambridge	1883
CAM.1014	Sawyer, Chester House	27 Lancaster St	Cambridge	1886
CAM.1015	Hovey, William B. House	29 Lancaster St	Cambridge	1887
CAM.1008		36 Lancaster St	Cambridge	1886
CAM.215	Yerxa House and Carriage House	37 Lancaster St	Cambridge	1887
CAM.216	Larches, The	22 Larch Rd	Cambridge	c 1808
CAM.1317	Metropolitan District Commission Boat House	Lechmere Canal	Cambridge	1910
CAM.217		15-17 Lee St	Cambridge	1856
CAM.218	Lowell, The	33 Lexington Ave	Cambridge	1900
CAM.1123		5-7 Linden St	Cambridge	c 1867
CAM.1124	Harvard Square Squash Court	8-10 Linden St	Cambridge	1908
CAM.1125	Delphic Club	9 Linden St	Cambridge	1902
CAM.219	Apthorp, Rev. East House	10 Linden St	Cambridge	c 1760
CAM.220	Cooper - Frost - Austin House	21 Linnaean St	Cambridge	1681
CAM.221	Peabody Court Apartments	41-43 Linnaean St	Cambridge	1922
CAM.1234	Cambridge Friends Meetinghouse and Center	5 Longfellow Pk	Cambridge	1914
CAM.1233		6 Longfellow Pk	Cambridge	1901
CAM.222	Lowell School	25 Lowell St	Cambridge	1883
CAM.1319	Magazine Beach Bath House	Magazine Beach	Cambridge	1899
CAM.223	First Baptist Church, Cambridge	5 Magazine St	Cambridge	1881
CAM.637	Church Corners Apartments	8-12 Magazine St	Cambridge	1985
CAM.510	Pilgrim Congregational Church	35 Magazine St	Cambridge	1871
CAM.511	Hinman, Joseph House	48 Magazine St	Cambridge	1875
CAM.512	Brewer, Isaac D. - Pulsifer, William Double House	50-52 Magazine St	Cambridge	1852

Inv. No.	Property Name	Street	Town	Year
CAM.513	Grace Methodist Church	56 Magazine St	Cambridge	1886
CAM.224	Flentje, Ernst House	129 Magazine St	Cambridge	1866
CAM.991	Shell Sign	187 Magazine St	Cambridge	1933
CAM.87	Kendall Square Subway Station	Main St	Cambridge	1912
CAM.225	Kendall Square Substation	Main St	Cambridge	1911
CAM.1308	Davenport - Allen and Endicott Factory Headhouse	Main St	Cambridge	1882
CAM.1309	Davenport - Allen and Endicott Factory East Wing	Main St	Cambridge	1848
CAM.1335	Luke Building	135-145 Main St	Cambridge	1874
CAM.1384	Engine House No. 7	350 Main St	Cambridge	c 1895
CAM.328	Union #2 Engine House	787-789 Main St	Cambridge	1852
CAM.609	Bright Building	853 Main St	Cambridge	1898
CAM.608	Wentworth Building	859-863 Main St	Cambridge	1897
CAM.610	Union Baptist Church	872 Main St	Cambridge	1882
CAM.607	Mellen Building	875 Main St	Cambridge	1897
CAM.606	Andelman, Ezra Building	877-881 Main St	Cambridge	1941
CAM.611	Sawyer, Charles Tenement	882-884 Main St	Cambridge	c 1873
CAM.605	Whitney, Lucretia and Henry Building	893-907 Main St	Cambridge	1870
CAM.703		6 Maple Ave	Cambridge	
CAM.694	Stevens, Charles B. House	8 Maple Ave	Cambridge	1873
CAM.704		12 Maple Ave	Cambridge	
CAM.705		14-16 Maple Ave	Cambridge	
CAM.702		15 Maple Ave	Cambridge	
CAM.701		19 Maple Ave	Cambridge	
CAM.697	Webster, Francis B. House	20 Maple Ave	Cambridge	1861
CAM.695	Hall, Lewis House	23 Maple Ave	Cambridge	1867
CAM.706		24 Maple Ave	Cambridge	
CAM.700		25 Maple Ave	Cambridge	r 1920
CAM.707		26 Maple Ave	Cambridge	
CAM.699		27 Maple Ave	Cambridge	
CAM.698		29 Maple Ave	Cambridge	
CAM.696	Munroe, Philip House	31 Maple Ave	Cambridge	1887
CAM.226	Mason, Josiah Jr. House	11 Market St	Cambridge	1831
CAM.295	Radcliffe College Gymnasium	Mason St	Cambridge	1898
CAM.296	Radcliffe College - Agassiz House	Mason St	Cambridge	1904
CAM.227	Norton House Ell	4 Mason St	Cambridge	1847
CAM.228		6-12 Mason St	Cambridge	

Inv. No.	Property Name	Street	Town	Year
CAM.260	M. I. T. Alumni Swimming Pool Building	Massachusetts Ave	Cambridge	1940
CAM.261	Kresge Auditorium	Massachusetts Ave	Cambridge	1953
CAM.262	M. I. T. Chapel	Massachusetts Ave	Cambridge	1954
CAM.901	Harvard Square Subway Kiosk	Massachusetts Ave	Cambridge	1928
CAM.905	Massachusetts Avenue Bridge over Conrail	Massachusetts Ave	Cambridge	1900
CAM.916	Central Square Subway Station	Massachusetts Ave	Cambridge	1912
CAM.921	Harvard Bridge	Massachusetts Ave	Cambridge	r 1890
CAM.938	Cambridge Common	Massachusetts Ave	Cambridge	1631
CAM.939	Cambridge Common South Traffic Island	Massachusetts Ave	Cambridge	1976
CAM.945	Burying Ground Fence	Massachusetts Ave	Cambridge	1891
CAM.946	Flagstaff Park	Massachusetts Ave	Cambridge	1913
CAM.947	North Little Common	Massachusetts Ave	Cambridge	c 1858
CAM.949	Central Square Street Pattern	Massachusetts Ave	Cambridge	c 1630
CAM.334	Cambridge Armory	120 Massachusetts Ave	Cambridge	1902
CAM.332	Metropolitan Storage Warehouse	134 Massachusetts Ave	Cambridge	1895
CAM.1366	New England Confectionery Company Factory	250 Massachusetts Ave	Cambridge	1927
CAM.612	Lamson, The	351-355 Massachusetts Ave	Cambridge	1907
CAM.614	Lafayette Square Fire Station	378 Massachusetts Ave	Cambridge	1893
CAM.613	Shell Gas Station	385 Massachusetts Ave	Cambridge	1948
CAM.615	Salvation Army - Cambridge Citadel	400-402 Massachusetts Ave	Cambridge	1968
CAM.604		401-409 Massachusetts Ave	Cambridge	1966
CAM.603	Taylor, William A. House and Shop	411-413 Massachusetts Ave	Cambridge	1887
CAM.602	Barkin and Gorfinkle Building	415-429 Massachusetts Ave	Cambridge	1925
CAM.616	Kennedy, Frank A. Store	424 Massachusetts Ave	Cambridge	1896
CAM.617	Kutz, Issac Store	428 Massachusetts Ave	Cambridge	c 1910
CAM.229	Kennedy, The	430-442 Massachusetts Ave	Cambridge	1890
CAM.601	Robbins Building	433-447 Massachusetts Ave	Cambridge	1923
CAM.619	Blanchard Building	448-450 Massachusetts Ave	Cambridge	c 1886
CAM.324	South Row	452-458 Massachusetts Ave	Cambridge	1807
CAM.1393	Dana Row - South Row	452-458 Massachusetts Ave	Cambridge	2003
CAM.599	Rogers, F. W. and G. M. Building	453-457 Massachusetts Ave	Cambridge	1885
CAM.620	Freedman Building	460-464 Massachusetts Ave	Cambridge	1933
CAM.598	McDonald's Restaurant	463-467 Massachusetts Ave	Cambridge	1974
CAM.621	Central Square Realty Trust Building	468-480 Massachusetts Ave	Cambridge	1929
CAM.597	Moller's Furniture Store	485 Massachusetts Ave	Cambridge	1926
CAM.622	Longfellow, The	492-498 Massachusetts Ave	Cambridge	1893
CAM.596	Kane's Furniture Store	493-507 Massachusetts Ave	Cambridge	1916
CAM.625	Burger King Restaraunt	506 Massachusetts Ave	Cambridge	1970

Inv. No.	Property Name	Street	Town	Year
CAM.1394	Hovey, Phineas Building	512-514 Massachusetts Ave	Cambridge	1842
CAM.595	Central Trust Building	515-527 Massachusetts Ave	Cambridge	1927
CAM.627	Miller Store	520 Massachusetts Ave	Cambridge	1924
CAM.628	Rosenwald Realty Corporation Building	522-526 Massachusetts Ave	Cambridge	1928
CAM.230	Odd Fellows Hall	536 Massachusetts Ave	Cambridge	1884
CAM.629	Clark - Lamb Building	546-550 Massachusetts Ave	Cambridge	c 1873
CAM.630	Albani Building	552-566 Massachusetts Ave	Cambridge	1925
CAM.592	Bullock, Charles Building	567-569 Massachusetts Ave	Cambridge	1859
CAM.591	Central Square Theater	571-577 Massachusetts Ave	Cambridge	1917
CAM.631	Ginsberg Building - Harvard Bazar	572-590 Massachusetts Ave	Cambridge	1913
CAM.590	Morse, Asa P. Building	579-587 Massachusetts Ave	Cambridge	1893
CAM.589	Cambridgeport National Bank Building	593-597 Massachusetts Ave	Cambridge	1869
CAM.632	Manhattan Market - Purity Supreme Super Market	596-610 Massachusetts Ave	Cambridge	1899
CAM.588	Morse, Asa Second Building	599-601 Massachusetts Ave	Cambridge	1905
CAM.587	Fisk and Coleman Building	603-605 Massachusetts Ave	Cambridge	1892
CAM.633	Prospect House	614-620 Massachusetts Ave	Cambridge	1869
CAM.586	Corcoran, John H. Building	615-627 Massachusetts Ave	Cambridge	1927
CAM.634	Holmes Block I	624-638 Massachusetts Ave	Cambridge	1915
CAM.1395	New Holmes Block	624-638 Massachusetts Ave	Cambridge	1998
CAM.585	Woolworth, F. W. Building	633-641 Massachusetts Ave	Cambridge	1950
CAM.584	Watriss Building	643-649 Massachusetts Ave	Cambridge	1880
CAM.583	Dowse, Thomas House	653-655 Massachusetts Ave	Cambridge	1814
CAM.581	New England Gas and Electric Association II Bldg	671-675 Massachusetts Ave	Cambridge	1966
CAM.642	Central Square Building	674 Massachusetts Ave	Cambridge	1926
CAM.643	Chamberlain - Hyde Building	684-688 Massachusetts Ave	Cambridge	1869
CAM.580	Cambridgeport Savings Bank	689 Massachusetts Ave	Cambridge	1904
CAM.644	Dana Building	692-698 Massachusetts Ave	Cambridge	1872
CAM.645	Southwick Building	700-706 Massachusetts Ave	Cambridge	1908
CAM.646	Norris Building	710-720 Massachusetts Ave	Cambridge	1916
CAM.579	Cambridge Electric Light Building	719 Massachusetts Ave	Cambridge	1912
CAM.647	Thayer Building I	722-724 Massachusetts Ave	Cambridge	1863
CAM.648	Thayer Building II	728-730 Massachusetts Ave	Cambridge	1868
CAM.578	Southwick Building	731-751 Massachusetts Ave	Cambridge	1896
CAM.649	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.650	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.231	Cambridge Mutual Fire Insurance Company Building	763 Massachusetts Ave	Cambridge	1888

Inv. No.	Property Name	Street	Town	Year
CAM.232	Central Square Post Office	770 Massachusetts Ave	Cambridge	1933
CAM.233	Cambridge City Hall	795 Massachusetts Ave	Cambridge	1889
CAM.651	Cambridge Senior Center	800-806 Massachusetts Ave	Cambridge	1925
CAM.652	Young Men's Christian Association Building	820-830 Massachusetts Ave	Cambridge	1896
CAM.1396	Brusch Medical Center	825-831 Massachusetts Ave	Cambridge	1951
CAM.653	Saint Peter's Episcopal Church	834 Massachusetts Ave	Cambridge	1867
CAM.654	Modern Manor Apartments	842-864 Massachusetts Ave	Cambridge	1925
CAM.900	Houghton Beech Tree	1000 Massachusetts Ave	Cambridge	
CAM.1127	Brentford Hall	1137 Massachusetts Ave	Cambridge	1899
CAM.1128	Dunham, Israel Houses	1156-1166 Massachusetts Ave	Cambridge	1858
CAM.1129		1168 Massachusetts Ave	Cambridge	c 1892
CAM.1130		1170-1174 Massachusetts Ave	Cambridge	c 1849
CAM.1131	Longfellow Court	1200 Massachusetts Ave	Cambridge	1916
CAM.1132	Gulf Gas Station	1201 Massachusetts Ave	Cambridge	1940
CAM.1133		1206 Massachusetts Ave	Cambridge	1965
CAM.1134		1208-1210 Massachusetts Ave	Cambridge	1842
CAM.1135	Quincy Hall	1218 Massachusetts Ave	Cambridge	1891
CAM.1136		1230 Massachusetts Ave	Cambridge	1907
CAM.1137		1234-1238 Massachusetts Ave	Cambridge	c 1894
CAM.1138	Hamden Hall	1246-1260 Massachusetts Ave	Cambridge	1902
CAM.1139	A. D. Club	1268-1270 Massachusetts Ave	Cambridge	1899
CAM.1140	Niles Building	1280 Massachusetts Ave	Cambridge	1984
CAM.234	Fairfax, The	1300-1306 Massachusetts Ave	Cambridge	1869
CAM.1141	Fairfax - Hilton Block	1310-1312 Massachusetts Ave	Cambridge	1883
CAM.1142	Fairfax - Hilton Block	1316 Massachusetts Ave	Cambridge	1885
CAM.235	Porcellian Club	1320-1324 Massachusetts Ave	Cambridge	1890
CAM.1143	Manter Hall	1325 Massachusetts Ave	Cambridge	1885
CAM.236	Wadsworth House	1341 Massachusetts Ave	Cambridge	1726
CAM.237	Holyoke Center	1350 Massachusetts Ave	Cambridge	1961
CAM.1144	Cambridge Savings Bank	1372-1376 Massachusetts Ave	Cambridge	1923
CAM.1145	Read, Joseph Stacey House	1380-1382 Massachusetts Ave	Cambridge	c 1783
CAM.1146	Bartlett, Joseph House	1384-1392 Massachusetts Ave	Cambridge	c 1800
CAM.1147	Harvard Coop Society	1400 Massachusetts Ave	Cambridge	1924
CAM.1148	Harvard Coop Society	1408-1410 Massachusetts Ave	Cambridge	1956
CAM.1149	Harvard Trust Company	1414 Massachusetts Ave	Cambridge	1923
CAM.1150	College House	1420-1442 Massachusetts Ave	Cambridge	1832
CAM.342	Gannett House	1511 Massachusetts Ave	Cambridge	1838
CAM.343	Hemenway Gymnasium	1517 Massachusetts Ave	Cambridge	1938

Inv. No.	Property Name	Street	Town	Year
CAM.344	Hastings Hall	1519 Massachusetts Ave	Cambridge	1888
CAM.345	Harvard Epworth Methodist Church	1555 Massachusetts Ave	Cambridge	1891
CAM.1334	Francis - Allyn House	1564 Massachusetts Ave	Cambridge	1831
CAM.1333	Sawin - Cobb - Wilson House	1626 Massachusetts Ave	Cambridge	1868
CAM.238	Saunders, Charles Hicks House	1627 Massachusetts Ave	Cambridge	1862
CAM.239	Montrose, The	1648 Massachusetts Ave	Cambridge	1898
CAM.240	Dunvegan, The	1654 Massachusetts Ave	Cambridge	1898
CAM.241	Worcester, Frederick House	1734 Massachusetts Ave	Cambridge	1886
CAM.242	North Avenue Congregational Church	1803 Massachusetts Ave	Cambridge	1845
CAM.243	Lovell Block	1853 Massachusetts Ave	Cambridge	1882
CAM.1385	Cambridge Masonic Temple	1950 Massachusetts Ave	Cambridge	1910
CAM.244	Saint James Episcopal Church	1991 Massachusetts Ave	Cambridge	1888
CAM.245	Henderson Carriage Repository	2067-2089 Massachusetts Ave	Cambridge	1892
CAM.246	Cornerstone Baptist Church	2114 Massachusetts Ave	Cambridge	1854
CAM.247	Mead, Alpheus House	2200 Massachusetts Ave	Cambridge	1867
CAM.248	Snow, Daniel House	2210 Massachusetts Ave	Cambridge	1868
CAM.249	McLean, Isaac House	2218 Massachusetts Ave	Cambridge	1894
CAM.250	Farwell, R. H. Double House	2222-2224 Massachusetts Ave	Cambridge	1891
CAM.251	Saint John's Roman Catholic Church	2270 Massachusetts Ave	Cambridge	1904
CAM.1390		2557 Massachusetts Ave	Cambridge	
CAM.1376	Matignon Central Catholic High School	1 Matignon Rd	Cambridge	1946
CAM.1375	Immaculate Conception Catholic Church Convent	33 Matignon Rd	Cambridge	1954
CAM.252	Cambridge Almshouse	45 Matignon Rd	Cambridge	1850
CAM.1374	Cambridge Almshouse Dormitory	45 Matignon Rd	Cambridge	c 1887
CAM.566	M. I. T. - Pierce, Henry L. Engineering Laboratory	Memorial Dr	Cambridge	1913
CAM.567	M. I. T. - Buildings #2 and #8	Memorial Dr	Cambridge	1913
CAM.568	M. I. T. - Pratt School of Naval Architecture	Memorial Dr	Cambridge	1919
CAM.569	M. I. T. - Homburg Infirmary	Memorial Dr	Cambridge	1927
CAM.570	M. I. T. - Eastman, George Research Laboratories	Memorial Dr	Cambridge	1931
CAM.571	M. I. T. - Rogers, William Barton Building	Memorial Dr	Cambridge	1937
CAM.572	M. I. T. - Walker Memorial	Memorial Dr	Cambridge	1913
CAM.573	M. I. T. - President's House	Memorial Dr	Cambridge	1913
CAM.574	M. I. T. - Senior House	Memorial Dr	Cambridge	1913
CAM.575	M. I. T. - Hayden Library	Memorial Dr	Cambridge	1949
CAM.930	Memorial Drive	Memorial Dr	Cambridge	1896
CAM.933	M. I. T. Memorial Underpass	Memorial Dr	Cambridge	1931

Inv. No.	Property Name	Street	Town	Year
CAM.934	Reid, William J. Overpass	Memorial Dr	Cambridge	1939
CAM.1332	Little, Arthur D. Inc. Building	Memorial Dr	Cambridge	1917
CAM.1398	Lever Brothers Company Administration Building	50 Memorial Dr	Cambridge	1938
CAM.253		100 Memorial Dr	Cambridge	1950
CAM.254	M. I. T. Main Courtyard	182-226 Memorial Dr	Cambridge	1913
CAM.255	Riverbank Court Hotel	305 Memorial Dr	Cambridge	1900
CAM.256	Baker House	362 Memorial Dr	Cambridge	1947
CAM.1327	Boston University Boat House	619 Memorial Dr	Cambridge	1913
CAM.257	B & B Chemical Company	780 Memorial Dr	Cambridge	1937
CAM.258	Peabody Terrace	900 Memorial Dr	Cambridge	1958
CAM.1201	Dunster House - Harvard University	945 Memorial Dr	Cambridge	1929
CAM.1202	Gore Hall - Harvard University	960 Memorial Dr	Cambridge	1913
CAM.1203	Standish Hall - Harvard University	966 Memorial Dr	Cambridge	1913
CAM.1204	Eliot House - Harvard University	967 Memorial Dr	Cambridge	1930
CAM.1324	Harvard University - Weld Boat House	971 Memorial Dr	Cambridge	1906
CAM.259	Conventual Church of Saint Mary and Saint John	980 Memorial Dr	Cambridge	1936
CAM.1267	Radnor Hall	983-984 Memorial Dr	Cambridge	1916
CAM.1268	Hampstead Hall	985-986 Memorial Dr	Cambridge	1916
CAM.1269	Barrington Court	987-989 Memorial Dr	Cambridge	1924
CAM.1270	Strathcona-on-the-Charles	992-993 Memorial Dr	Cambridge	1914
CAM.1300		2 Mercer Cir	Cambridge	1894
CAM.1287		3 Mercer Cir	Cambridge	1885
CAM.1288		4 Mercer Cir	Cambridge	1885
CAM.1294		5 Mercer Cir	Cambridge	1887
CAM.1291		6 Mercer Cir	Cambridge	1886
CAM.1307	Harris, William F. House	7 Mercer Cir	Cambridge	1922
CAM.1289		8 Mercer Cir	Cambridge	1885
CAM.1292		9 Mercer Cir	Cambridge	1886
CAM.1151		11-15 Mifflin Pl	Cambridge	1901
CAM.1152		12-14 Mifflin Pl	Cambridge	1913
CAM.1153		17-19 Mifflin Pl	Cambridge	1972
CAM.1205	McKinlock Hall - Harvard University	8 Mill St	Cambridge	1926
CAM.1206	Leverett House Library and Towers - Harvard Univ.	14-18 Mill St	Cambridge	1958
CAM.263	Cambridge Neighborhood House	79 Moore St	Cambridge	c 1821
CAM.264	Reversible Collar Company Building	25-27 Mount Auburn St	Cambridge	1860
CAM.1154	Saint Paul's Rectory	32-36 Mount Auburn St	Cambridge	1924
CAM.1155	Speakers Club	43-45 Mount Auburn St	Cambridge	1845

Inv. No.	Property Name	Street	Town	Year
CAM.1156		45 1/2 Mount Auburn St	Cambridge	1971
CAM.1157		47-49 Mount Auburn St	Cambridge	1926
CAM.1158	Claverly Hall	63 Mount Auburn St	Cambridge	1892
CAM.1159		65R Mount Auburn St	Cambridge	1957
CAM.1160	Ridgely Hall	65 Mount Auburn St	Cambridge	1904
CAM.1161	Manter Hall School	71-77 Mount Auburn St	Cambridge	1927
CAM.1162	Phoenix - S. K. Club	72 Mount Auburn St	Cambridge	1915
CAM.1163	Iroquois Club	74 Mount Auburn St	Cambridge	1916
CAM.1164	Spee Club	76 Mount Auburn St	Cambridge	1931
CAM.1165	Willard, Lucy House	78 Mount Auburn St	Cambridge	1839
CAM.1166		90 Mount Auburn St	Cambridge	1971
CAM.1167		92-96 Mount Auburn St	Cambridge	1895
CAM.1168		95-97 Mount Auburn St	Cambridge	1920
CAM.1169		99 Mount Auburn St	Cambridge	c 1919
CAM.1170	Cantabrigia Club	100 Mount Auburn St	Cambridge	c 1919
CAM.1171		102 Mount Auburn St	Cambridge	1869
CAM.1172		104 Mount Auburn St	Cambridge	1983
CAM.1173		110 Mount Auburn St	Cambridge	1959
CAM.9	Boston Elevated Railway Division 7 Headquarters	112 Mount Auburn St	Cambridge	c 1911
CAM.1175	Trinity Hall	114-120 Mount Auburn St	Cambridge	1892
CAM.1177	Waverly Hall	115 Mount Auburn St	Cambridge	1902
CAM.1178		119-123 Mount Auburn St	Cambridge	1988
CAM.1176		120R Mount Auburn St	Cambridge	1982
CAM.1126	U. S. Post Office - Cambridge Branch	125 Mount Auburn St	Cambridge	1953
CAM.791		151 Mount Auburn St	Cambridge	1853
CAM.792		153 Mount Auburn St	Cambridge	1874
CAM.789		154 Mount Auburn St	Cambridge	1852
CAM.790		156-158 Mount Auburn St	Cambridge	1856
CAM.265		173 Mount Auburn St	Cambridge	r 1905
CAM.266		175 Mount Auburn St	Cambridge	r 1895
CAM.267		259 Mount Auburn St	Cambridge	c 1850
CAM.268	Mount Auburn Hospital - Surgical Building	330 Mount Auburn St	Cambridge	1897
CAM.269	Mount Auburn Hospital - Main Building	330 Mount Auburn St	Cambridge	1886
CAM.801	Mount Auburn Cemetery	580 Mount Auburn St	Cambridge	1831
CAM.936	Mount Auburn Cemetery Fence and Gates	580 Mount Auburn St	Cambridge	1843
CAM.992	Mount Auburn Cemetery - Copenhagen, Maria Angel	580 Mount Auburn St	Cambridge	1872

Inv. No.	Property Name	Street	Town	Year
CAM.270	Mount Auburn Cemetery Reception House	583 Mount Auburn St	Cambridge	1870
CAM.1330	DeRosay - McNamee House	50 Mount Vernon St	Cambridge	1896
CAM.557		1-2 Norfolk Pl	Cambridge	1844
CAM.558		3 Norfolk Pl	Cambridge	1846
CAM.593	Powers, Hannah - Ginsberg, Harris Building	7-15 Norfolk St	Cambridge	c 1894
CAM.562	Hotel Norfolk	30 Norfolk St	Cambridge	1886
CAM.560		51 Norfolk St	Cambridge	c 1885
CAM.561		59 Norfolk St	Cambridge	1886
CAM.554		65-67 Norfolk St	Cambridge	1844
CAM.559	Pollard, John House	68-72 Norfolk St	Cambridge	1859
CAM.552		69 Norfolk St	Cambridge	1843
CAM.555		71-73 Norfolk St	Cambridge	1844
CAM.556		75-77 Norfolk St	Cambridge	1844
CAM.551	Fuller, Robert House	79 Norfolk St	Cambridge	1843
CAM.553		87 Norfolk St	Cambridge	1843
CAM.563	Hotel Franklin	90 Norfolk St	Cambridge	1886
CAM.1392	Saint Mary of the Annunciation Catholic Church	134 Norfolk St	Cambridge	r 1865
CAM.550		1-2 Norfolk Terr	Cambridge	1839
CAM.913	East Cambridge Viaduct - Lechmere Viaduct	O'Brien Hwy	Cambridge	1910
CAM.9020	Boston and Lowell Railroad Retaining Wall	O'Brien Hwy	Cambridge	c 1857
CAM.349	Lockhart, William L. Coffin Factory Warehouse	195-199 O'Brien Hwy	Cambridge	1873
CAM.271	Barnes, James B. House	200 O'Brien Hwy	Cambridge	1824
CAM.348	Lockhart, William L. Coffin Factory Main Building	201 O'Brien Hwy	Cambridge	r 1870
CAM.272	Lockart, William L. Company Building	209 O'Brien Hwy	Cambridge	c 1859
CAM.1400	Morrell, John and Company Branch House	221 O'Brien Hwy	Cambridge	1929
CAM.1399	Whitehead Metal Products Company	225 O'Brien Hwy	Cambridge	1929
CAM.273	Aborn, John House	41 Orchard St	Cambridge	1846
CAM.274	Billings, Frederick House	45 Orchard St	Cambridge	1846
CAM.1310	Davenport - Allen and Endicott Factory West Wing	Osborn St	Cambridge	1848
CAM.1311	Davenport - Allen Factory West Wing Extension	Osborn St	Cambridge	1848
CAM.1312	Allen and Endicott Factory Extension	Osborn St	Cambridge	1896
CAM.1313	Allen and Endicott Factory Extension	Osborn St	Cambridge	1896
CAM.461	Putnam School	Otis St	Cambridge	1889
CAM.465	Saint Hedwig's Parish Church	Otis St	Cambridge	1939
CAM.468	Otis Hospital	Otis St	Cambridge	
CAM.371	Woodbury, James A. - Geldowsky, Ferdinand Building	2-28 Otis St	Cambridge	1869

Inv. No.	Property Name	Street	Town	Year
CAM.374		31 Otis St	Cambridge	1900
CAM.473	Hall, Lewis and William A. Rowhouse	55 Otis St	Cambridge	1851
CAM.474	Hall, Lewis and William A. Rowhouse	57 Otis St	Cambridge	1851
CAM.475	Hall, Lewis and William A. Rowhouse	59 Otis St	Cambridge	1851
CAM.485	Hazard, Samuel L. House	60 Otis St	Cambridge	1871
CAM.476	Hall, Lewis and William A. Rowhouse	61 Otis St	Cambridge	1851
CAM.484		62 Otis St	Cambridge	
CAM.472	Sortwell, Daniel R. Double House	63-65 Otis St	Cambridge	1871
CAM.483		64 Otis St	Cambridge	
CAM.471		65 1/2 Otis St	Cambridge	
CAM.482	Jones, Andrew - Hall, William A. Double House	66-68 Otis St	Cambridge	1846
CAM.470	Goss, Abiel Double House	67-69 Otis St	Cambridge	1839
CAM.481		70 Otis St	Cambridge	
CAM.469		73-75 Otis St	Cambridge	
CAM.480		74 Otis St	Cambridge	
CAM.479		78 Otis St	Cambridge	
CAM.477	Clark, Josias - Cummings, Daniel P. Rowhouse	80 Otis St	Cambridge	1861
CAM.478	Clark, Josias - Cummings, Daniel P. Rowhouse	82 Otis St	Cambridge	1861
CAM.467	Deshon, Royal P. House	93 Otis St	Cambridge	1842
CAM.460		94 Otis St	Cambridge	
CAM.466		95-97 Otis St	Cambridge	
CAM.459		96 Otis St	Cambridge	
CAM.458		98 Otis St	Cambridge	
CAM.457	Taylor, Oliver House	100 Otis St	Cambridge	1848
CAM.455	Adams, Jabez F. - Atwood, Samuel S. Rowhouse	102 Otis St	Cambridge	1848
CAM.464	Bridgeman, John L. Double House	103-105 Otis St	Cambridge	1843
CAM.456	Adams, Jabez F. - Atwood, Samuel S. Rowhouse	104 Otis St	Cambridge	1848
CAM.454		106-108 Otis St	Cambridge	
CAM.463		107-109 Otis St	Cambridge	
CAM.453		110 Otis St	Cambridge	
CAM.462		113 Otis St	Cambridge	
CAM.439		117 1/2 Otis St	Cambridge	
CAM.440		117-119 Otis St	Cambridge	
CAM.451		118 Otis St	Cambridge	
CAM.450		120 Otis St	Cambridge	
CAM.448	Dennison, James Double House	122-124 Otis St	Cambridge	1870
CAM.449		122 1/2-124 1/2 Otis St	Cambridge	
CAM.438		123 Otis St	Cambridge	

Inv. No.	Property Name	Street	Town	Year
CAM.437		125-127 Otis St	Cambridge	
CAM.447		126-128 Otis St	Cambridge	
CAM.436		129-131 Otis St	Cambridge	
CAM.446		130 Otis St	Cambridge	
CAM.445		132 Otis St	Cambridge	
CAM.435		133-135 Otis St	Cambridge	
CAM.275	Hoyt, Benjamin House	134 Otis St	Cambridge	1868
CAM.443		136-138 Otis St	Cambridge	
CAM.434	Warren, Moses - Smith, Benjamin G. Rowhouse	137 Otis St	Cambridge	1852
CAM.1339	Warren, Moses - Smith, Benjamin G. Rowhouse	139 Otis St	Cambridge	1852
CAM.442		140 Otis St	Cambridge	1895
CAM.1340	Warren, Moses - Smith, Benjamin G. Rowhouse	141 Otis St	Cambridge	1852
CAM.1341	Warren, Moses - Smith, Benjamin G. Rowhouse	143 Otis St	Cambridge	1852
CAM.1342	Warren, Moses - Smith, Benjamin G. Rowhouse	145 Otis St	Cambridge	1852
CAM.433	Fraser, John B. Double House	147-149 Otis St	Cambridge	1846
CAM.432		151 Otis St	Cambridge	
CAM.1179	Coop Annex	18 Palmer St	Cambridge	1964
CAM.276	Urban Rowhouse	30-38 Pearl St	Cambridge	1874
CAM.277	Urban Rowhouse	40-50 Pearl St	Cambridge	1875
CAM.278	Valentine Soap Workers' Cottage	101 Pearl St	Cambridge	1835
CAM.1368	Blessed Sacrament Roman Catholic Church	175 Pearl St	Cambridge	1907
CAM.1370	Blessed Sacrament Roman Catholic Church Rectory	189 Pearl St	Cambridge	1868
CAM.279		3 Phillips Pl	Cambridge	
CAM.280		5 Phillips Pl	Cambridge	c 1845
CAM.281		7 Phillips Pl	Cambridge	1898
CAM.282		9 Phillips Pl	Cambridge	r 1870
CAM.1180	Harvard Crimson Newspaper Office	14-18 Plympton St	Cambridge	1915
CAM.1181	Crimson Building Annex	22 Plympton St	Cambridge	1961
CAM.1182	Adams House Dining Hall	28 Plympton St	Cambridge	1930
CAM.1183	Russell Hall	28 Plympton St	Cambridge	1931
CAM.1184	Russell Hall	30-30A Plympton St	Cambridge	1887
CAM.1207	Quincy House - Harvard University	58 Plympton St	Cambridge	1958
CAM.1208	Mather Hall - Harvard University	68-88 Plympton St	Cambridge	1930
CAM.1209		101-103 Plympton St	Cambridge	1870
CAM.1382	Brooks Apartments - Winthrop, John Chambers	78-80 Porter Rd	Cambridge	1915
CAM.283	Willis, Stillman House	1 Potter Pk	Cambridge	1839
CAM.1401	Volpe Center - High Rise Laboratory	2 Potter St	Cambridge	c 1965

Inv. No.	Property Name	Street	Town	Year
CAM.1403	Volpe Center - Space Guidance Building	2 Potter St	Cambridge	c 1965
CAM.1404	Volpe Center - Space Optics Building	2 Potter St	Cambridge	c 1965
CAM.284	Saunders, William House	6 Prentiss St	Cambridge	1843
CAM.1352	Beck - Warren House	1 Prescott St	Cambridge	1833
CAM.285		16 Prescott St	Cambridge	1873
CAM.291	Carpenter Center for the Visual Arts	19 Prescott St	Cambridge	1963
CAM.582	New England Gas and Electric Association I Bldg	45 Prospect St	Cambridge	1960
CAM.286	Prospect Congregational Church	99 Prospect St	Cambridge	1851
CAM.287	Baldwin, Maria House	196 Prospect St	Cambridge	r 1845
CAM.288	Sands, Hiram House	22 Putnam Ave	Cambridge	1848
CAM.293	Harvard Union	Quincy St	Cambridge	1900
CAM.986	Harvard University - Hallowell Gate	10 Quincy St	Cambridge	1928
CAM.289	Dana, Richard Henry - Palmer, George Herbert House	12-16 Quincy St	Cambridge	1822
CAM.952	Harvard University - Quincy Street Gate	17 Quincy St	Cambridge	1936
CAM.1213	Harvard University - President's House	17 Quincy St	Cambridge	1911
CAM.290	Fogg Art Museum	26-32 Quincy St	Cambridge	1925
CAM.292	Church of the New Jerusalem	50 Quincy St	Cambridge	1903
CAM.1266		60 Raymond St	Cambridge	1927
CAM.298	Mason, W. A. House	87 Raymond St	Cambridge	1846
CAM.299	Stickney, N. U. - Shepard, S. P. Double House	11-13 Remington St	Cambridge	1846
CAM.300	Hooper, Edward W. - Eliot, Rev. Samuel A. House	25-27 Reservoir Rd	Cambridge	1872
CAM.301		59 Rice St	Cambridge	1847
CAM.327	Hews Pottery Company Carriage House	202 Richdale Ave	Cambridge	1897
CAM.302	Kidder - Sargent - McCrehan House	146 Rindge Ave	Cambridge	1792
CAM.303	Wyeth Brickyard Superintendent's House	336 Rindge Ave	Cambridge	c 1848
CAM.923	River Street Bridge	River St	Cambridge	1926
CAM.304	Urban Rowhouse	26-32 River St	Cambridge	1860
CAM.330	Ricker, George and Jerediah House	109-113 River St	Cambridge	1844
CAM.305	River Street Firehouse	176 River St	Cambridge	1890
CAM.1211		11 Riverview Ave	Cambridge	1899
CAM.922	Boston University Bridge	Rt 2	Cambridge	1928
CAM.306	Soule, Lawrence Porter House	11 Russell St	Cambridge	1879
CAM.307	Wood, James A. House	3 Sacramento St	Cambridge	1888
CAM.1239	Winthrop Hall - Episcopal Theological School	Saint John's Rd	Cambridge	1892
CAM.529		6-8 Salem St	Cambridge	c 1829
CAM.530		10 Salem St	Cambridge	c 1840

Inv. No.	Property Name	Street	Town	Year
CAM.531		15 Salem St	Cambridge	c 1841
CAM.415	Hastings, Deborah House	72 Sciarappa St	Cambridge	1823
CAM.416		74 Sciarappa St	Cambridge	
CAM.401	Pendexter, Charles House	80-82 Sciarappa St	Cambridge	1847
CAM.1321	Boston Museum of Science	Science Park	Cambridge	1951
CAM.1322	Hayden Planetarium	Science Park	Cambridge	1958
CAM.770		2 Scott St	Cambridge	1889
CAM.771	Thaxter, Roland House	7 Scott St	Cambridge	1891
CAM.772		8 Scott St	Cambridge	1889
CAM.773		11 Scott St	Cambridge	1893
CAM.774		12 Scott St	Cambridge	1894
CAM.775		14 Scott St	Cambridge	1927
CAM.776		18 Scott St	Cambridge	1928
CAM.375	Roby, Ebenezer Rowhouse	30 Second St	Cambridge	1836
CAM.376	Roby, Ebenezer Rowhouse	32 Second St	Cambridge	1836
CAM.377	Roby, Ebenezer Rowhouse	34 Second St	Cambridge	1836
CAM.364	Hall, Jesse Rowhouse	36 Second St	Cambridge	1842
CAM.365	Hall, Jesse Rowhouse	38 Second St	Cambridge	1842
CAM.366	Hall, Jesse Rowhouse	40 Second St	Cambridge	1842
CAM.367	Hall, Jesse Rowhouse	42 Second St	Cambridge	1842
CAM.368	Hall, Jesse Rowhouse	44 Second St	Cambridge	1842
CAM.369	Hall, Jesse Rowhouse	46 Second St	Cambridge	1842
CAM.370		50 Second St	Cambridge	
CAM.308	American Net and Twine Company Factory	155R Second St	Cambridge	1875
CAM.777		1 Shady Hill Sq	Cambridge	1915
CAM.778		2-3 Shady Hill Sq	Cambridge	1915
CAM.779		4-5 Shady Hill Sq	Cambridge	1915
CAM.780		6-7 Shady Hill Sq	Cambridge	1915
CAM.781		8-9 Shady Hill Sq	Cambridge	1915
CAM.782		10-11 Shady Hill Sq	Cambridge	1915
CAM.783		12 Shady Hill Sq	Cambridge	1915
CAM.309	Eliot Hall	51 Shepard St	Cambridge	1907
CAM.310	Bertram Hall	53 Shepard St	Cambridge	1901
CAM.311	Watson, Abraham Jr. House	181-183 Sherman St	Cambridge	c 1750
CAM.506	Sacred Heart Roman Catholic Church	39 Sixth St	Cambridge	1874
CAM.431		40 Sixth St	Cambridge	
CAM.508	Sacred Heart Roman Catholic Church Rectory	49 Sixth St	Cambridge	1885
CAM.927	Eliot Bridge	Soldier's Field Rd	Cambridge	1950

Inv. No.	Property Name	Street	Town	Year
CAM.1210	Bryan Hall - Harvard University	14-24 South St	Cambridge	1930
CAM.312	Stedman, Samuel House	17 South St	Cambridge	1826
CAM.1185	Harvard Advocate Building	21 South St	Cambridge	1956
CAM.313	Dodge, Edward House	70 Sparks St	Cambridge	1878
CAM.325	Harugari Hall	154 Spring St	Cambridge	1873
CAM.1186		4-6 Story St	Cambridge	1966
CAM.1187		8-12 Story St	Cambridge	1969
CAM.1188		14-16 Story St	Cambridge	1970
CAM.353	Blake and Knowles Core Shop #1	Third St	Cambridge	c 1889
CAM.354	Blake and Knowles Core Shop #2	Third St	Cambridge	c 1890
CAM.505	Lechmere Point Corporation Row House	25 Third St	Cambridge	c 1821
CAM.381	Rollins, John W. Rowhouse	83 Third St	Cambridge	1860
CAM.382	Rollins, John W. Rowhouse	85 Third St	Cambridge	1860
CAM.383	Rollins, John W. Rowhouse	87 Third St	Cambridge	1860
CAM.384	Rollins, John W. Rowhouse	89 Third St	Cambridge	1860
CAM.331	Old Middlesex County Superior Courthouse	90 Third St	Cambridge	1814
CAM.385	Rollins, John W. Rowhouse	91 Third St	Cambridge	1860
CAM.386	Rollins, John W. Rowhouse	93 Third St	Cambridge	1860
CAM.387	Rollins, John W. Rowhouse	95 Third St	Cambridge	1860
CAM.314	Holy Cross Polish National Catholic Church	99 Third St	Cambridge	1827
CAM.315	Bottle House Block	204-214 Third St	Cambridge	1826
CAM.350	Blake and Knowles Machine Shop #1	265 Third St	Cambridge	1889
CAM.351	Blake and Knowles Office Headhouse	265 Third St	Cambridge	1892
CAM.355	Blake and Knowles Smith Shop and Brass Foundry	275 Third St	Cambridge	c 1890
CAM.326	Cambridge Gas Light Company Purifying Plant	354 Third St	Cambridge	1908
CAM.388	Stevens, Atherton H. Rowhouse	59 Thorndike St	Cambridge	1827
CAM.395	Smallidge, Samuel House	66 Thorndike St	Cambridge	1827
CAM.389	Bates, Moses Jr. House	69 Thorndike St	Cambridge	1844
CAM.396	Buck, Silas B. House	70 Thorndike St	Cambridge	1845
CAM.390	Tufts, Sophia Kimball Double House	71-73 Thorndike St	Cambridge	1857
CAM.397	Wellington, Peter House	74 Thorndike St	Cambridge	1843
CAM.391		75 Thorndike St	Cambridge	
CAM.398		76 Thorndike St	Cambridge	
CAM.392		77 Thorndike St	Cambridge	
CAM.399		78 Thorndike St	Cambridge	
CAM.393		79-81 Thorndike St	Cambridge	
CAM.400		80 Thorndike St	Cambridge	

Inv. No.	Property Name	Street	Town	Year
CAM.394		83 Thorndike St	Cambridge	
CAM.402	Stickney, Francis H. - Davies, Benjamin Rowhouse	84 Thorndike St	Cambridge	1867
CAM.417	Clark, Cornelius - Kneeland, W. W. House	85 Thorndike St	Cambridge	1822
CAM.403	Stickney, Francis H. - Davies, Benjamin Rowhouse	86 Thorndike St	Cambridge	1867
CAM.404	Stickney, Francis H. - Davies, Benjamin Rowhouse	88 Thorndike St	Cambridge	1867
CAM.418		89-91 Thorndike St	Cambridge	
CAM.405	Stickney, Francis H. - Davies, Benjamin Rowhouse	90 Thorndike St	Cambridge	1867
CAM.406	Stickney, Francis H. - Davies, Benjamin Rowhouse	92 Thorndike St	Cambridge	1867
CAM.419	Whitacre, Celeste I. Rowhouse	93 Thorndike St	Cambridge	1885
CAM.407	Stickney, Francis H. - Davies, Benjamin Rowhouse	94 Thorndike St	Cambridge	1867
CAM.420	Whitacre, Celeste I. Rowhouse	95 Thorndike St	Cambridge	1885
CAM.408	Train, Isaac House	96 Thorndike St	Cambridge	1826
CAM.421	Whitacre, Celeste I. Rowhouse	97 Thorndike St	Cambridge	1885
CAM.422	Davies, Daniel House	97 1/2 Thorndike St	Cambridge	1843
CAM.409		98 Thorndike St	Cambridge	
CAM.423		99 Thorndike St	Cambridge	
CAM.424	Daniels, Granville W. House	101 Thorndike St	Cambridge	1868
CAM.410		102 Thorndike St	Cambridge	
CAM.411	Spare, Elijah Jr. Double House	104-106 Thorndike St	Cambridge	1846
CAM.425	Eaton, Charles House	109 Thorndike St	Cambridge	1857
CAM.412	Quimby, Amos House	110 Thorndike St	Cambridge	1857
CAM.426		111-113 Thorndike St	Cambridge	
CAM.413	Stickney, Francis H. Double House	112-114 Thorndike St	Cambridge	1863
CAM.427		113 1/2 Thorndike St	Cambridge	
CAM.414	Bacon, Henry A. House	116 Thorndike St	Cambridge	1865
CAM.507	Sacred Heart Roman Catholic School and Convent	163 Thorndike St	Cambridge	1902
CAM.316	Craigie Arms	2-6 University Rd	Cambridge	1897
CAM.317	Wyeth, Jacob - Smith, Ebenezer House	152 Vassal Ln	Cambridge	1820
CAM.360	Metropolitan Supply Company Warehouse	269 Vassar St	Cambridge	1948
CAM.361	Hovey, F. A. and Company Warehouse	271-275 Vassar St	Cambridge	c 1940
CAM.362	Metropolitan Supply Company Warehouse	277-287 Vassar St	Cambridge	1939
CAM.363	Metropolitan Supply Company Warehouse	289-293 Vassar St	Cambridge	1939
CAM.989	Walden Street Cattle Pass	Walden St	Cambridge	1857

Inv. No.	Property Name	Street	Town	Year
CAM.1283	Bennink - Douglas Double Cottage	35-37 Walker St	Cambridge	1874
CAM.1284	Bennink - Douglas Double Cottage	39-41 Walker St	Cambridge	1874
CAM.1285	Bennink - Douglas Double Cottage	43-45 Walker St	Cambridge	1874
CAM.1286	Bennink - Douglas Double Cottage	49-51 Walker St	Cambridge	1874
CAM.1034	Sands, Orrin E. House	2 Walnut Ave	Cambridge	1911
CAM.1032		4 Walnut Ave	Cambridge	1878
CAM.1033	Niles, Jacob Harris House	6 Walnut Ave	Cambridge	1884
CAM.1031	Niles, Eugene M. House	9 Walnut Ave	Cambridge	1887
CAM.318	Stanstead, The	19 Ware St	Cambridge	1887
CAM.799	Ritchie, David House	26 Washington Ave	Cambridge	1889
CAM.793	Brown, Laura House	27 Washington Ave	Cambridge	1908
CAM.794	Mellen, James House	33 Washington Ave	Cambridge	1887
CAM.795	Kelley, Stillman F. House	49 Washington Ave	Cambridge	1887
CAM.1000	Boardman, Charles House	58 Washington Ave	Cambridge	1880
CAM.797	Mansfield, Gardiner House	63 Washington Ave	Cambridge	1873
CAM.798	Green, Charles G. House	71 Washington Ave	Cambridge	1877
CAM.1001	Boynton, Morris House	78 Washington Ave	Cambridge	c 1874
CAM.319	Melendy, Henry J. House	81 Washington Ave	Cambridge	1871
CAM.1002		86-88 Washington Ave	Cambridge	1870
CAM.1003		92 Washington Ave	Cambridge	1876
CAM.1004	Hutchins, Elizabeth House	108 Washington Ave	Cambridge	1924
CAM.541	Whittemore, Rev. Thomas Double House	271-273 Washington St	Cambridge	1837
CAM.540	Whittemore, Rev. Thomas Double House	288 Washington St	Cambridge	1837
CAM.539	Paige, Rev. Lucius R. House	296 Washington St	Cambridge	1837
CAM.346		1 Waterhouse St	Cambridge	1916
CAM.320	Vassall - Waterhouse - Ware House	7 Waterhouse St	Cambridge	c 1753
CAM.347		9 Waterhouse St	Cambridge	1887
CAM.335	Christian Science Church	13 Waterhouse St	Cambridge	1923
CAM.988	Fort Washington	95 Waverly St	Cambridge	
CAM.924	Western Avenue Bridge	Western Ave	Cambridge	1924
CAM.638	Cambridge Police Headquarters	5 Western Ave	Cambridge	1933
CAM.948	Central Square Park	22 Western Ave	Cambridge	1987
CAM.321	Read, Cheney House	135 Western Ave	Cambridge	1846
CAM.323	Hasey, Abraham - Wheat, Dr. Samuel House	8 Willard St	Cambridge	c 1730
CAM.514	Hixon, Edward House	3 William St	Cambridge	1857
CAM.1378	Immaculate Conception (Lithuanian) Catholic Church	432 Windsor St	Cambridge	1910
CAM.1379	Immaculate Conception (Lithuanian) Church	432 Windsor St	Cambridge	1972

Inv. No.	Property Name	Street	Town	Year
	Rectory			
CAM.1380	Immaculate Conception Church Rectory Metal Garage	432 Windsor St	Cambridge	1941
CAM.1381	Immaculate Conception Church Rectory Wood Garage	432 Windsor St	Cambridge	1948
CAM.500		19 Winter St	Cambridge	r 1855
CAM.492		21 Winter St	Cambridge	c 1854
CAM.486	Leighton, Thomas H. House	22 Winter St	Cambridge	1833
CAM.491		24 Winter St	Cambridge	c 1854
CAM.493		25 Winter St	Cambridge	c 1854
CAM.494		27 Winter St	Cambridge	c 1854
CAM.496		28-30 Winter St	Cambridge	c 1854
CAM.495		29 Winter St	Cambridge	c 1854
CAM.497		31-33 Winter St	Cambridge	c 1854
CAM.501		34-42 Winter St	Cambridge	r 1875
CAM.498		61 Winter St	Cambridge	c 1854
CAM.499		65 Winter St	Cambridge	c 1854
CAM.489	Stevens, Atherton Haugh House	67 Winter St	Cambridge	1843
CAM.490	Stevens, Atherton Haugh House	71 Winter St	Cambridge	1843
CAM.487	Stevens, Atherton Haugh House	74 Winter St	Cambridge	1838
CAM.1344		75 Winter St	Cambridge	
CAM.1345	Stevens, Atherton Haugh House	77 Winter St	Cambridge	1838
CAM.488	Stevens, Atherton Haugh House	79 Winter St	Cambridge	1838
CAM.1189	Metcalf, Lydia House	41 Winthrop St	Cambridge	1845
CAM.1190		65-67 Winthrop St	Cambridge	1887
CAM.1191	University Lutheran Church	66 Winthrop St	Cambridge	1950
CAM.1192		69 Winthrop St	Cambridge	r 1835
CAM.1193	Pi Eta Club	89 Winthrop St	Cambridge	r 1908
CAM.1194	Pi Eta Hall	95 Winthrop St	Cambridge	r 1896
CAM.1195	Hyde, Isaac - Taylor House	96 Winthrop St	Cambridge	1845
CAM.329	Cox - Hicks House	98 Winthrop St	Cambridge	c 1806
CAM.951	Winthrop Street Retaining Wall	98 Winthrop St	Cambridge	c 1725
CAM.1196	Dame School	106 Winthrop St	Cambridge	c 1800
CAM.909	Yerxa Street Pedestrian Subway	Yerxa St	Cambridge	1904
CAM.1391	Saint Patrick's Roman Catholic Church	40-50 York St	Cambridge	

APPENDIX F

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:
Consultation Code: 05E1NE00-2018-SLI-0972
Event Code: 05E1NE00-2018-E-02217
Project Name: 50 Rogers Street

February 13, 2018

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0972

Event Code: 05E1NE00-2018-E-02217

Project Name: 50 Rogers Street

Project Type: DEVELOPMENT

Project Description: 50 Rogers Street, Cambridge, MA
30,000 sf, construction of a 6-story residential building with two-levels of below-grade parking, June 2018-June 2020

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.36562758056557N71.0788223354377W

Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 0 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. 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.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC **U.S. Fish & Wildlife Service**

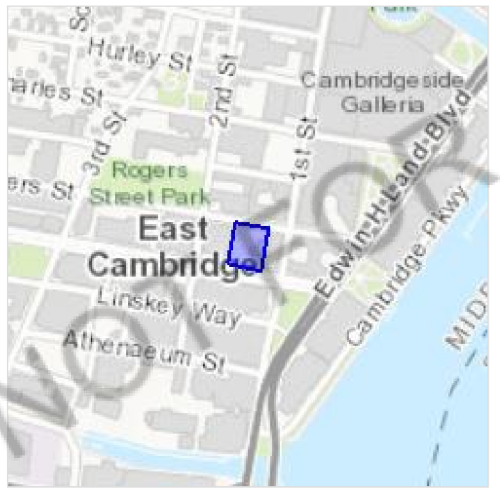
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Middlesex County, Massachusetts



Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

THERE ARE NO ENDANGERED SPECIES EXPECTED TO OCCUR AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus — Breeds Oct 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Buff-breasted Sandpiper Calidris subruficollis — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9488

Cerulean Warbler Dendroica cerulea — Breeds Apr 29 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8745

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

King Rail Rallus elegans — Breeds May 1 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8936

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-eared Owl asio otus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Nelson's Sparrow Ammodramus nelsoni — Breeds May 15 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-throated Loon Gavia stellata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Snowy Owl Bubo scandiacus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

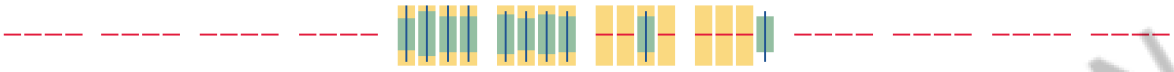
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.

Buff-breasted Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Cerulean Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Eastern Whip-poor-will
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Evening Grosbeak
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Golden-winged Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Kentucky Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

King Rail
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

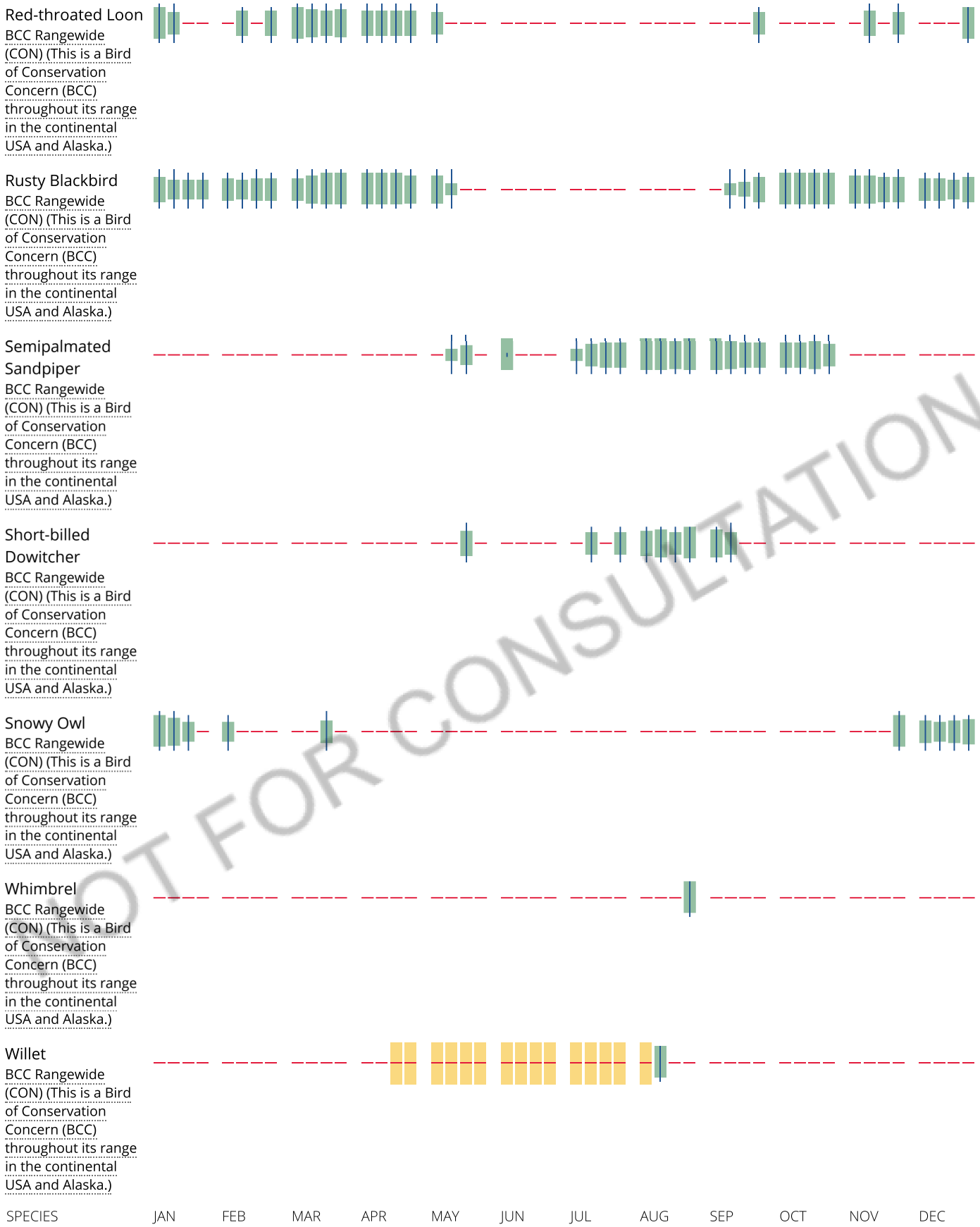
Long-eared Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nelson's Sparrow
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

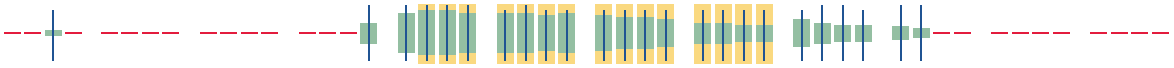
Prairie Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the counties which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX G

Best Management Practices Plan (BMPP)

HALEY ALDRICH

APPENDIX F – BEST MANAGEMENT PRACTICES PLAN
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
REMEDIATION GENERAL PERMIT
50 ROGERS STREET
CAMBRIDGE, MASSACHUSETTS

Best Management Practices Plan

A Notice of Intent for a Remediation General Permit (RGP) under the National Pollutant Discharge Elimination System (NPDES) has been submitted to the US Environmental Protection Agency (EPA) in anticipation of temporary construction dewatering planned to occur during the construction of the proposed development located at 50 Rogers Street in Cambridge, Massachusetts. This Best Management Practices Plan (BMPP) has been prepared as an Appendix to the RGP and will be posted at the site during the time that temporary construction dewatering is occurring at the site.

Water Treatment and Management

Construction dewatering will be conducted using a combination of drainage ditches and sumps located inside the excavation. The treatment system has been designed by the Contractor (Refer to Appendix C for Contractor's submittal). Prior to discharge, collected water will be routed through a sedimentation tank and bag filters, as required, to remove suspended solids and undissolved chemical constituents. The Proposed Treatment System Schematic is shown on Figure 4. Construction dewatering under this RGP NOI will include piping and discharging to storm drains located in Rogers Street and Binney Street, adjacent to the site. The storm drains travel short distance south and east before discharging to the Charles River through outfall CAM017 as shown on Figure 2.

Discharge Monitoring and Compliance

Regular sampling and testing will be conducted by the Contractor of the treated effluent as required by the RGP. This includes chemical testing required within the first month of discharging and the monthly testing to be conducted through the end of the scheduled discharge.

Monitoring will include checking the condition of the treatment system, assessing the need for treatment system adjustments based on monitoring data, observing and recording daily flow rates and discharge quantities, and verifying the flow path of the discharged effluent.

The total monthly flow will be monitored by checking and documenting the flow through the flow meter to be installed on the system. Flow will be maintained below the "system design flow" by regularly monitoring flow and adjusting the amount of construction dewatering as needed.

Monthly monitoring reports will be compiled and maintained at the site.

System Maintenance

A number of methods will be used to minimize the potential for violations for the term of this permit. Scheduled regular maintenance of the treatment system will be conducted to verify proper operation. Regular maintenance will include checking the condition of the treatment system equipment such as the sedimentation tanks, filters, hoses, pumps, and flow meters. Equipment will be monitored daily for potential issues or unscheduled maintenance requirements.

Employees who have direct or indirect responsibility for ensuring compliance with the RGP will be trained by the Operator.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
REMEDIATION GENERAL PERMIT
50 ROGERS STREET
CAMBRIDGE, MASSACHUSETTS

Miscellaneous Items

It is anticipated that the excavation support system, erosion control measures, and the nature of the site and surrounding infrastructure will minimize potential runoff to or from the site. The project specifications also include requirements for erosion control.

Site security for the treatment system will be covered within the overall site security plan.

No adverse affects of designated water use of surrounding surface water bodies is anticipated. The Charles River is the nearest surface water body to the site located adjacent to the construction activities on site. Dewatering effluent will be pumped to a sedimentation tank, bag filters, and any other treatment components (as required), prior to discharge to the storm drains.

Management of Treatment System Materials

Groundwater analytical data for the site is below the applicable MCP RCGW-2 criteria. Dewatering effluent will be pumped directly to the treatment system from the excavation with use of hoses and sumps to minimize handling. The Contractor will establish staging areas on the site for any equipment or materials storage which may be possible sources of pollution away from any dewatering activities.

Sediment from the sedimentation tank used in the treatment system will be characterized and disposed of as soil at an appropriate receiving facility in accordance with applicable laws and regulations.

APPENDIX H

Laboratory Data Reports

HALEY ALDRICH

ANALYTICAL REPORT

Lab Number:	L1746496
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Rebecca Higgins
Phone:	(617) 886-7326
Project Name:	50 ROGERS STREET
Project Number:	34250-840
Report Date:	12/22/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1746496-01	HA-D4(OW)_2017-1215	WATER	CAMBRIDGE, MA	12/15/17 09:05	12/15/17

Project Name: 50 ROGERS STREET **Lab Number:** L1746496

Project Number: 34250-840 **Report Date:** 12/22/17

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).	YES
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

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

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

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

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746496
Project Number:	34250-840	**Report Date:**	12/22/17

Case Narrative (continued)

MCP Related Narratives

Volatile Organics

In reference to question H:

The initial calibration, associated with L1746496-01 (HA-D4(OW)_2017-1215), did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0012), as well as the average response factor for 1,4-dioxane.

The continuing calibration standard, associated with L1746496-01 (HA-D4(OW)_2017-1215), 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.

VPH

In reference to question I:

All samples were analyzed for a subset of MCP analytes per the Chain of Custody.

EPH

In reference to question I:

All samples were analyzed for a subset of MCP analytes per the Chain of Custody.

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

Authorized Signature: Amita Naik

Title: Technical Director/Representative Date: 12/22/17

ORGANICS

VOLATILES

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01
Client ID: HA-D4(OW)_2017-1215
Sample Location: CAMBRIDGE, MA

Date Collected: 12/15/17 09:05
Date Received: 12/15/17
Field Prep: Not Specified

Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 12/20/17 18:54
Analyst: NL

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	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	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
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746496

Project Number: 34250-840 **Report Date:** 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01 Date Collected: 12/15/17 09:05

Client ID: HA-D4(OW)_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
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
Xylene (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
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	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
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

Project Name: 50 ROGERS STREET **Lab Number:** L1746496

Project Number: 34250-840 **Report Date:** 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01 Date Collected: 12/15/17 09:05

Client ID: HA-D4(OW)_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl 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	100		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	103		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 12/20/17 12:05
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075029-5					
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	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
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: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 12/20/17 12:05
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075029-5					
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	--
Xylene (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	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	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: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 12/20/17 12:05
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075029-5					
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	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl 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	121		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075029-3 WG1075029-4								
Methylene chloride	90		92		70-130	2		20
1,1-Dichloroethane	96		98		70-130	2		20
Chloroform	92		93		70-130	1		20
Carbon tetrachloride	94		99		70-130	5		20
1,2-Dichloropropane	95		95		70-130	0		20
Dibromochloromethane	94		90		70-130	4		20
1,1,2-Trichloroethane	98		95		70-130	3		20
Tetrachloroethene	92		100		70-130	8		20
Chlorobenzene	95		95		70-130	0		20
Trichlorofluoromethane	110		110		70-130	0		20
1,2-Dichloroethane	110		110		70-130	0		20
1,1,1-Trichloroethane	93		100		70-130	7		20
Bromodichloromethane	97		95		70-130	2		20
trans-1,3-Dichloropropene	91		92		70-130	1		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	98		100		70-130	2		20
Bromoform	94		94		70-130	0		20
1,1,2,2-Tetrachloroethane	93		97		70-130	4		20
Benzene	92		95		70-130	3		20
Toluene	95		94		70-130	1		20
Ethylbenzene	89		94		70-130	5		20
Chloromethane	81		94		70-130	15		20
Bromomethane	98		87		70-130	12		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746496

Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075029-3 WG1075029-4								
Vinyl chloride	100		100		70-130	0		20
Chloroethane	120		130		70-130	8		20
1,1-Dichloroethene	96		100		70-130	4		20
trans-1,2-Dichloroethene	89		93		70-130	4		20
Trichloroethene	89		90		70-130	1		20
1,2-Dichlorobenzene	90		88		70-130	2		20
1,3-Dichlorobenzene	92		94		70-130	2		20
1,4-Dichlorobenzene	89		93		70-130	4		20
Methyl tert butyl ether	95		93		70-130	2		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		100		70-130	0		20
cis-1,2-Dichloroethene	93		93		70-130	0		20
Dibromomethane	92		92		70-130	0		20
1,2,3-Trichloropropane	92		96		70-130	4		20
Styrene	95		100		70-130	5		20
Dichlorodifluoromethane	82		90		70-130	9		20
Acetone	110		100		70-130	10		20
Carbon disulfide	86		93		70-130	8		20
2-Butanone	120		110		70-130	9		20
4-Methyl-2-pentanone	92		92		70-130	0		20
2-Hexanone	82		83		70-130	1		20
Bromochloromethane	100		96		70-130	4		20
Tetrahydrofuran	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746496

Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075029-3 WG1075029-4								
2,2-Dichloropropane	92		100		70-130	8		20
1,2-Dibromoethane	95		90		70-130	5		20
1,3-Dichloropropane	94		90		70-130	4		20
1,1,1,2-Tetrachloroethane	81		83		70-130	2		20
Bromobenzene	90		92		70-130	2		20
n-Butylbenzene	100		100		70-130	0		20
sec-Butylbenzene	120		**140**	Q	70-130	15		20
tert-Butylbenzene	92		95		70-130	3		20
o-Chlorotoluene	95		99		70-130	4		20
p-Chlorotoluene	92		96		70-130	4		20
1,2-Dibromo-3-chloropropane	84		78		70-130	7		20
Hexachlorobutadiene	89		99		70-130	11		20
Isopropylbenzene	92		100		70-130	8		20
p-Isopropyltoluene	97		100		70-130	3		20
Naphthalene	86		91		70-130	6		20
n-Propylbenzene	96		100		70-130	4		20
1,2,3-Trichlorobenzene	91		84		70-130	8		20
1,2,4-Trichlorobenzene	89		90		70-130	1		20
1,3,5-Trimethylbenzene	96		99		70-130	3		20
1,2,4-Trimethylbenzene	95		96		70-130	1		20
Ethyl ether	110		120		70-130	9		20
Isopropyl Ether	100		99		70-130	1		20
Ethyl-Tert-Butyl-Ether	97		97		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746496

Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075029-3 WG1075029-4								
Tertiary-Amyl Methyl Ether	98		90		70-130	9		20
1,4-Dioxane	94		78		70-130	19		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		107		70-130
Toluene-d8	104		102		70-130
4-Bromofluorobenzene	93		96		70-130
Dibromofluoromethane	101		101		70-130

SEMIVOLATILES

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01
Client ID: HA-D4(OW)_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 97,8270D
Analytical Date: 12/21/17 15:26
Analyst: SZ

Date Collected: 12/15/17 09:05
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 12/21/17 06:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
Acetophenone	ND		ug/l	5.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746496

Project Number: 34250-840 **Report Date:** 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01 Date Collected: 12/15/17 09:05

Client ID: HA-D4(OW)_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics - Westborough Lab						
2,4-Dinitrophenol	ND		ug/l	20	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		15-110
Phenol-d6	41		15-110
Nitrobenzene-d5	95		30-130
2-Fluorobiphenyl	96		30-130
2,4,6-Tribromophenol	108		15-110
4-Terphenyl-d14	100		30-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01
Client ID: HA-D4(OW)_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 97,8270D-SIM
Analytical Date: 12/21/17 17:56
Analyst: DV

Date Collected: 12/15/17 09:05
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 12/21/17 07:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Semivolatile Organics by SIM - Westborough Lab						
Acenaphthene	0.48		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	0.71		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	0.13		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	0.38		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	0.30		ug/l	0.10	--	1
Phenanthrene	1.3		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	0.54		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746496

Project Number: 34250-840 **Report Date:** 12/22/17

SAMPLE RESULTS

Lab ID: L1746496-01 Date Collected: 12/15/17 09:05

Client ID: HA-D4(OW)_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

MCP Semivolatile Organics by SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		15-110
Phenol-d6	32		15-110
Nitrobenzene-d5	77		30-130
2-Fluorobiphenyl	96		30-130
2,4,6-Tribromophenol	100		15-110
4-Terphenyl-d14	100		30-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 12/21/17 15:21
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/21/17 06:41

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075244-1					
Acenaphthene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 12/21/17 15:21
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/21/17 06:41

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075244-1					
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
Acetophenone	ND		ug/l	5.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
2-Chlorophenol	ND		ug/l	2.0	--
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D
Analytical Date: 12/21/17 15:21
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/21/17 06:41

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics - Westborough Lab for sample(s): 01 Batch: WG1075244-1					
Tentatively Identified Compounds					
Total TIC Compounds	28.5	J	ug/l		
Unknown	28.5	J	ug/l		

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		15-110
Phenol-d6	49		15-110
Nitrobenzene-d5	119		30-130
2-Fluorobiphenyl	101		30-130
2,4,6-Tribromophenol	95		15-110
4-Terphenyl-d14	105		30-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 12/21/17 15:14
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/21/17 07:47

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01 Batch: WG1075281-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 12/21/17 15:14
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/21/17 07:47

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01 Batch: WG1075281-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		15-110
Phenol-d6	36		15-110
Nitrobenzene-d5	85		30-130
2-Fluorobiphenyl	108		30-130
2,4,6-Tribromophenol	104		15-110
4-Terphenyl-d14	113		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075244-2 WG1075244-3								
Acenaphthene	82		72		40-140	13		20
1,2,4-Trichlorobenzene	74		64		40-140	14		20
Hexachlorobenzene	75		66		40-140	13		20
Bis(2-chloroethyl)ether	83		71		40-140	16		20
2-Chloronaphthalene	78		68		40-140	14		20
1,2-Dichlorobenzene	71		63		40-140	12		20
1,3-Dichlorobenzene	71		60		40-140	17		20
1,4-Dichlorobenzene	72		62		40-140	15		20
3,3'-Dichlorobenzidine	76		68		40-140	11		20
2,4-Dinitrotoluene	94		82		40-140	14		20
2,6-Dinitrotoluene	87		76		40-140	13		20
Azobenzene	95		82		40-140	15		20
Fluoranthene	87		74		40-140	16		20
4-Bromophenyl phenyl ether	73		67		40-140	9		20
Bis(2-chloroisopropyl)ether	91		79		40-140	14		20
Bis(2-chloroethoxy)methane	88		76		40-140	15		20
Hexachlorobutadiene	68		57		40-140	18		20
Hexachloroethane	74		65		40-140	13		20
Isophorone	91		78		40-140	15		20
Naphthalene	75		65		40-140	14		20
Nitrobenzene	86		75		40-140	14		20
Bis(2-ethylhexyl)phthalate	104		91		40-140	13		20
Butyl benzyl phthalate	101		85		40-140	17		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075244-2 WG1075244-3								
Di-n-butylphthalate	98		84		40-140	15		20
Di-n-octylphthalate	105		91		40-140	14		20
Diethyl phthalate	86		77		40-140	11		20
Dimethyl phthalate	84		72		40-140	15		20
Benzo(a)anthracene	89		76		40-140	16		20
Benzo(a)pyrene	92		78		40-140	16		20
Benzo(b)fluoranthene	88		78		40-140	12		20
Benzo(k)fluoranthene	88		75		40-140	16		20
Chrysene	86		74		40-140	15		20
Acenaphthylene	81		71		40-140	13		20
Anthracene	88		75		40-140	16		20
Benzo(ghi)perylene	89		74		40-140	18		20
Fluorene	85		74		40-140	14		20
Phenanthrene	82		72		40-140	13		20
Dibenzo(a,h)anthracene	89		75		40-140	17		20
Indeno(1,2,3-cd)pyrene	93		77		40-140	19		20
Pyrene	84		73		40-140	14		20
Aniline	57		52		40-140	9		20
4-Chloroaniline	69		62		40-140	11		20
Dibenzofuran	81		71		40-140	13		20
2-Methylnaphthalene	80		68		40-140	16		20
Acetophenone	89		78		40-140	13		20
2,4,6-Trichlorophenol	87		73		30-130	18		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics - Westborough Lab Associated sample(s): 01 Batch: WG1075244-2 WG1075244-3								
2-Chlorophenol	80		70		30-130	13		20
2,4-Dichlorophenol	82		74		30-130	10		20
2,4-Dimethylphenol	91		78		30-130	15		20
2-Nitrophenol	86		75		30-130	14		20
4-Nitrophenol	57		50		30-130	13		20
2,4-Dinitrophenol	80		67		30-130	18		20
Pentachlorophenol	67		58		30-130	14		20
Phenol	40		34		30-130	16		20
2-Methylphenol	74		66		30-130	11		20
3-Methylphenol/4-Methylphenol	71		61		30-130	15		20
2,4,5-Trichlorophenol	81		71		30-130	13		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	56		49		15-110
Phenol-d6	41		35		15-110
Nitrobenzene-d5	93		78		30-130
2-Fluorobiphenyl	81		70		30-130
2,4,6-Tribromophenol	79		66		15-110
4-Terphenyl-d14	80		69		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01 Batch: WG1075281-2 WG1075281-3								
Acenaphthene	78		71		40-140	9		20
2-Chloronaphthalene	78		71		40-140	9		20
Fluoranthene	79		72		40-140	9		20
Hexachlorobutadiene	60		56		40-140	7		20
Naphthalene	72		66		40-140	9		20
Benzo(a)anthracene	80		73		40-140	9		20
Benzo(a)pyrene	81		74		40-140	9		20
Benzo(b)fluoranthene	86		79		40-140	8		20
Benzo(k)fluoranthene	79		72		40-140	9		20
Chrysene	81		74		40-140	9		20
Acenaphthylene	81		74		40-140	9		20
Anthracene	81		74		40-140	9		20
Benzo(ghi)perylene	82		76		40-140	8		20
Fluorene	79		72		40-140	9		20
Phenanthrene	80		73		40-140	9		20
Dibenzo(a,h)anthracene	83		76		40-140	9		20
Indeno(1,2,3-cd)pyrene	85		78		40-140	9		20
Pyrene	77		70		40-140	10		20
2-Methylnaphthalene	75		70		40-140	7		20
Pentachlorophenol	69		64		30-130	8		20
Hexachlorobenzene	72		66		40-140	9		20
Hexachloroethane	56		52		40-140	7		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01 Batch: WG1075281-2 WG1075281-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	55		47		15-110
Phenol-d6	36		30		15-110
Nitrobenzene-d5	70		65		30-130
2-Fluorobiphenyl	90		83		30-130
2,4,6-Tribromophenol	87		79		15-110
4-Terphenyl-d14	89		81		30-130

PETROLEUM HYDROCARBONS

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

SAMPLE RESULTS

Lab ID:	L1746496-01	Date Collected:	12/15/17 09:05
Client ID:	HA-D4(OW)_2017-1215	Date Received:	12/15/17
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	12/20/17 11:24		
Analyst:	MZ		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	81		70-130
2,5-Dibromotoluene-FID	88		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

SAMPLE RESULTS

Lab ID:	L1746496-01	Date Collected:	12/15/17 09:05
Client ID:	HA-D4(OW)_2017-1215	Date Received:	12/15/17
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	12/20/17 21:05
Analytical Date:	12/21/17 22:10	Cleanup Method1:	EPH-04-1
Analyst:	NS	Cleanup Date1:	12/21/17

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	45		40-140
o-Terphenyl	81		40-140
2-Fluorobiphenyl	87		40-140
2-Bromonaphthalene	80		40-140

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 100,VPH-04-1.1
Analytical Date: 12/20/17 10:44
Analyst: MZ

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 01 Batch: WG1075060-4					
C5-C8 Aliphatics	ND		ug/l	50.0	--
C9-C12 Aliphatics	ND		ug/l	50.0	--
C9-C10 Aromatics	ND		ug/l	50.0	--
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	78		70-130
2,5-Dibromotoluene-FID	85		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 12/21/17 19:33
Analyst: NS

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 21:05
Cleanup Method: EPH-04-1
Cleanup Date: 12/21/17

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 01 Batch: WG1075131-1					
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	47		40-140
o-Terphenyl	53		40-140
2-Fluorobiphenyl	73		40-140
2-Bromonaphthalene	69		40-140

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01 Batch: WG1075060-2 WG1075060-3								
C5-C8 Aliphatics	88		98		70-130	11		25
C9-C12 Aliphatics	96		105		70-130	9		25
C9-C10 Aromatics	85		93		70-130	8		25
Benzene	79		87		70-130	10		25
Toluene	80		88		70-130	10		25
Ethylbenzene	83		91		70-130	9		25
p/m-Xylene	82		90		70-130	9		25
o-Xylene	82		90		70-130	9		25
Methyl tert butyl ether	78		84		70-130	8		25
Naphthalene	86		92		70-130	7		25
1,2,4-Trimethylbenzene	85		93		70-130	8		25
Pentane	91		101		70-130	11		25
2-Methylpentane	91		102		70-130	12		25
2,2,4-Trimethylpentane	91		102		70-130	12		25
n-Nonane	93		103		30-130	10		25
n-Decane	99		106		70-130	7		25
n-Butylcyclohexane	98		108		70-130	10		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	84		89		70-130
2,5-Dibromotoluene-FID	90		96		70-130

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Batch Quality Control

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Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01 Batch: WG1075131-2 WG1075131-3								
C9-C18 Aliphatics	71		74		40-140	4		25
C19-C36 Aliphatics	80		76		40-140	5		25
C11-C22 Aromatics	80		78		40-140	3		25
Naphthalene	61		68		40-140	11		25
2-Methylnaphthalene	64		69		40-140	8		25
Acenaphthylene	71		73		40-140	3		25
Acenaphthene	73		74		40-140	1		25
Fluorene	76		76		40-140	0		25
Phenanthrene	80		76		40-140	5		25
Anthracene	82		77		40-140	6		25
Fluoranthene	84		78		40-140	7		25
Pyrene	85		79		40-140	7		25
Benzo(a)anthracene	84		78		40-140	7		25
Chrysene	83		79		40-140	5		25
Benzo(b)fluoranthene	86		80		40-140	7		25
Benzo(k)fluoranthene	83		79		40-140	5		25
Benzo(a)pyrene	83		77		40-140	8		25
Indeno(1,2,3-cd)Pyrene	74		73		40-140	1		25
Dibenzo(a,h)anthracene	75		76		40-140	1		25
Benzo(ghi)perylene	69		69		40-140	0		25
Nonane (C9)	57		64		30-140	12		25
Decane (C10)	62		69		40-140	11		25
Dodecane (C12)	66		72		40-140	9		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01 Batch: WG1075131-2 WG1075131-3								
Tetradecane (C14)	70		73		40-140	4		25
Hexadecane (C16)	75		75		40-140	0		25
Octadecane (C18)	79		76		40-140	4		25
Nonadecane (C19)	78		75		40-140	4		25
Eicosane (C20)	80		76		40-140	5		25
Docosane (C22)	79		75		40-140	5		25
Tetracosane (C24)	79		74		40-140	7		25
Hexacosane (C26)	79		74		40-140	7		25
Octacosane (C28)	79		74		40-140	7		25
Triacontane (C30)	79		74		40-140	7		25
Hexatriacontane (C36)	80		75		40-140	6		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	60		58		40-140
o-Terphenyl	81		77		40-140
2-Fluorobiphenyl	87		84		40-140
2-Bromonaphthalene	85		78		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746496
Report Date: 12/22/17

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(*)
L1746496-01A	Vial HCl preserved	B	NA		4.0	Y	Absent		MCP-8260-10(14)
L1746496-01B	Vial HCl preserved	B	NA		4.0	Y	Absent		MCP-8260-10(14)
L1746496-01C	Vial HCl preserved	B	NA		4.0	Y	Absent		MCP-8260-10(14)
L1746496-01D	Vial HCl preserved	B	NA		4.0	Y	Absent		VPH-10(14)
L1746496-01E	Vial HCl preserved	B	NA		4.0	Y	Absent		VPH-10(14)
L1746496-01F	Vial HCl preserved	B	NA		4.0	Y	Absent		VPH-10(14)
L1746496-01G	Amber 1000ml HCl preserved	B	<2	<2	4.0	Y	Absent		EPH-10(14)
L1746496-01H	Amber 1000ml HCl preserved	B	<2	<2	4.0	Y	Absent		EPH-10(14)
L1746496-01J	Amber 1000ml unpreserved	B	7	7	4.0	Y	Absent		MCP-8270-10(7),MCP-8270SIM-10(7)
L1746496-01K	Amber 1000ml unpreserved	B	7	7	4.0	Y	Absent		MCP-8270-10(7),MCP-8270SIM-10(7)

*Values in parentheses indicate holding time in days

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746496
Project Number:	34250-840	**Report Date:**	12/22/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746496
Project Number:	34250-840	**Report Date:**	12/22/17

Data Qualifiers

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

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

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

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

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

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

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

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

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

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746496
Report Date: 12/22/17

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.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

100 Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of VPH under the Massachusetts Contingency Plan, WSC-CAM-IVA, 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: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

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

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

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

ALPHA ANALYTICAL

CHAIN OF CUSTODY

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: 12/15/17

ALPHA Job #: L1746496

Project Information
- Project Name: 50 Rogers Street
- Project Location: Cambridge, MA
- Project #: 34250-840
- (Use Project name as Project #) ☐
- Project Manager: Rebecca Higgins/Lee Penwell
- 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 #

H&A Information
- H&A Client: ARE-MA Region No. 21 LLC
- H&A Address: 465 Medford St, Suite 2200
- Boston, MA 02129
- H&A Phone: 617-886-7359
- H&A Fax: gdaylor@haleyaldrich.com
- H&A Email: lpenwell@haleyaldrich.com

These samples have been previously analyzed by Alpha ☐

Regulatory Requirements (Program/Criteria)
MA

Note: Select State from menu & identify criteria.

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

Other project specific requirements/comments:
Please sample per EPA Approved 2017 RGP Permit methods

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's Initials	1. VOCs	2. SVOCs	3. EPH c-ranges	4. VPH c-ranges	Sample Specific Comments	Total Bottles
46496-01	HA-D4(OW)_2017-1215	12/15/17	0905	AQ	SRP	X	X	X	X		10
Container Type						V	A	A	V		
Preservative						B	A	B	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
[signature]	12/15/17	M. Watt	12/15/17 1630
M. Watt	12/15/17 1617	[signature] AAL	12/15/17 1800
[signature] AAL	12/15/17 1900	[signature]	12/15/17 1900

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# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

Method Blank Summary
Form 4

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L1746496
Project Name	: 50 ROGERS STREET	**Project Number**	: 34250-840
Lab Sample ID	: WG1075029-5	**Lab File ID**	: V16171220C05
Instrument ID	: VOA116		
Matrix	: WATER	**Analysis Date**	: 12/20/17 12:05

Client Sample No.	Lab Sample ID	Analysis Date
WG1075029-3LCS	WG1075029-3	12/20/17 10:07
WG1075029-4LCSD	WG1075029-4	12/20/17 10:37
HA-D4(OW)_2017-1215	L1746496-01	12/20/17 18:54

Continuing Calibration
Form 7

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L1746496		
Project Name	: 50 ROGERS STREET	**Project Number**	: 34250-840		
Instrument ID	: VOA116	**Calibration Date**	: 12/20/17 10:07		
Lab File ID	: V16171220C01	**Init. Calib. Date(s)**	: 11/13/17	11/13/17	
Sample No	: WG1075029-2	**Init. Calib. Times**	: 12:12	15:09	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	86	0
Dichlorodifluoromethane	0.33	0.272	-	17.6	20	76	0
Chloromethane	0.311	0.252	-	19	20	70	0
Vinyl chloride	0.253	0.258	-	-2	20	89	0
Bromomethane	0.131	0.128	-	2.3	20	88	-.01
Chloroethane	10	12.05	-	-20.5*	20	99	.01
Trichlorofluoromethane	0.446	0.478	-	-7.2	20	95	0
Ethyl ether	0.094	0.107	-	-13.8	20	103	0
1,1-Dichloroethene	0.239	0.23	-	3.8	20	83	0
Carbon disulfide	0.684	0.586	-	14.3	20	73	0
Methylene chloride	0.275	0.246	-	10.5	20	79	-.01
Acetone	10	11.111	-	-11.1	20	94	-.01
trans-1,2-Dichloroethene	0.284	0.253	-	10.9	20	79	-.01
Methyl tert-butyl ether	0.562	0.535	-	4.8	20	86	0
Diisopropyl ether	0.81	0.811	-	-0.1	20	92	0
1,1-Dichloroethane	0.513	0.492	-	4.1	20	84	0
Ethyl tert-butyl ether	0.675	0.653	-	3.3	20	89	0
cis-1,2-Dichloroethene	0.3	0.278	-	7.3	20	84	0
2,2-Dichloropropane	0.428	0.396	-	7.5	20	83	0
Bromochloromethane	0.135	0.136	-	-0.7	20	83	-.01
Chloroform	0.531	0.491	-	7.5	20	83	0
Carbon tetrachloride	0.469	0.441	-	6	20	92	0
Tetrahydrofuran	10	11.378	-	-13.8	20	102	0
Dibromofluoromethane	0.288	0.291	-	-1	20	87	-.01
1,1,1-Trichloroethane	0.483	0.45	-	6.8	20	85	-.01
2-Butanone	10	11.91	-	-19.1	20	102	0
1,1-Dichloropropene	0.367	0.36	-	1.9	20	90	0
Benzene	1.092	1.005	-	8	20	81	0
tert-Amyl methyl ether	0.583	0.571	-	2.1	20	81	0
1,2-Dichloroethane-d4	0.293	0.313	-	-6.8	20	101	-.01
1,2-Dichloroethane	0.277	0.305	-	-10.1	20	100	0
Trichloroethene	0.311	0.277	-	10.9	20	84	0
Dibromomethane	0.162	0.149	-	8	20	82	0
1,2-Dichloropropane	0.259	0.246	-	5	20	86	0
Bromodichloromethane	0.389	0.377	-	3.1	20	91	0
1,4-Dioxane	0.00131	0.00124*	-	5.3	20	92	0
cis-1,3-Dichloropropene	0.386	0.393	-	-1.8	20	94	0
Chlorobenzene-d5	1	1	-	0	20	85	0
Toluene-d8	1.202	1.25	-	-4	20	89	0
Toluene	0.843	0.798	-	5.3	20	84	0
4-Methyl-2-pentanone	10	9.245	-	7.6	20	83	0
Tetrachloroethene	0.394	0.364	-	7.6	20	82	0
trans-1,3-Dichloropropene	0.469	0.426	-	9.2	20	87	0
1,1,2-Trichloroethane	0.222	0.217	-	2.3	20	83	-.01
Chlorodibromomethane	0.356	0.337	-	5.3	20	82	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L1746496		
Project Name	: 50 ROGERS STREET	**Project Number**	: 34250-840		
Instrument ID	: VOA116	**Calibration Date**	: 12/20/17 10:07		
Lab File ID	: V16171220C01	**Init. Calib. Date(s)**	: 11/13/17	11/13/17	
Sample No	: WG1075029-2	**Init. Calib. Times**	: 12:12	15:09	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.441	0.416	-	5.7	20	85	0
1,2-Dibromoethane	0.255	0.242	-	5.1	20	81	-.01
2-Hexanone	10	8.202	-	18	20	80	0
Chlorobenzene	0.935	0.886	-	5.2	20	82	0
Ethylbenzene	1.746	1.555	-	10.9	20	76	0
1,1,1,2-Tetrachloroethane	0.421	0.34	-	19.2	20	67	0
p/m Xylene	0.596	0.592	-	0.7	20	83	-.01
o Xylene	0.553	0.544	-	1.6	20	84	-.01
Styrene	20	18.669	-	6.7	20	79	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	89	0
Bromoform	0.389	0.367	-	5.7	20	80	-.01
Isopropylbenzene	3.019	2.781	-	7.9	20	84	0
4-Bromofluorobenzene	0.885	0.826	-	6.7	20	86	-.01
Bromobenzene	0.746	0.672	-	9.9	20	77	-.01
n-Propylbenzene	3.671	3.544	-	3.5	20	87	0
1,1,2,2-Tetrachloroethane	0.552	0.512	-	7.2	20	77	-.01
2-Chlorotoluene	2.47	2.357	-	4.6	20	84	-.01
1,3,5-Trimethylbenzene	2.539	2.444	-	3.7	20	85	0
1,2,3-Trichloropropane	10	9.15	-	8.5	20	74	-.01
4-Chlorotoluene	2.206	2.025	-	8.2	20	81	-.01
tert-Butylbenzene	10	9.242	-	7.6	20	90	0
1,2,4-Trimethylbenzene	2.503	2.379	-	5	20	84	0
sec-Butylbenzene	1.21	1.466	-	-21.2*	20	104	0
p-Isopropyltoluene	2.583	2.495	-	3.4	20	88	0
1,3-Dichlorobenzene	1.464	1.342	-	8.3	20	79	0
1,4-Dichlorobenzene	1.482	1.313	-	11.4	20	77	0
n-Butylbenzene	2.356	2.483	-	-5.4	20	98	0
1,2-Dichlorobenzene	1.303	1.178	-	9.6	20	79	0
1,2-Dibromo-3-chloropropan	0.086	0.072	-	16.3	20	73	0
Hexachlorobutadiene	0.338	0.301	-	10.9	20	91	0
1,2,4-Trichlorobenzene	0.731	0.652	-	10.8	20	76	0
Naphthalene	1.492	1.289	-	13.6	20	78	0
1,2,3-Trichlorobenzene	0.623	0.569	-	8.7	20	80	0

* Value outside of QC limits.

ANALYTICAL REPORT

Lab Number:	L1746498
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Rebecca Higgins
Phone:	(617) 886-7326
Project Name:	50 ROGERS STREET
Project Number:	34250-840
Report Date:	12/21/17

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1746498-01	HA-C2(OW)-NPDES_2017-1215	WATER	CAMBRIDGE, MA	12/15/17 10:00	12/15/17

Project Name: 50 ROGERS STREET **Lab Number:** L1746498
Project Number: 34250-840 **Report Date:** 12/21/17

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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

Please contact Client Services at 800-624-9220 with any questions.

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

Authorized Signature:  Kelly Stenstrom

Title: Technical Director/Representative Date: 12/21/17

ORGANICS

VOLATILES

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 12/20/17 10:43
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.8	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	2.5	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.5	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.5	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	2.5	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01 Date Collected: 12/15/17 10:00

Client ID: HA-C2(OW)-NPDES_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2.5	--	1
1,4-Dichlorobenzene	ND		ug/l	2.5	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	5.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	5.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	5.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	5.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.5	--	1
Tetrahydrofuran	ND		ug/l	5.0	--	1
2,2-Dichloropropane	ND		ug/l	2.5	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.5	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	2.5	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	2.5	--	1
o-Chlorotoluene	ND		ug/l	2.5	--	1
p-Chlorotoluene	ND		ug/l	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	2.5	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01 Date Collected: 12/15/17 10:00

Client ID: HA-C2(OW)-NPDES_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	2.5	--	1
Tert-Butyl Alcohol	ND		ug/l	10	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

Project Name: 50 ROGERS STREET
Lab Number: L1746498
Project Number: 34250-840
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified

Matrix: Water
Analytical Method: 1,8260C-SIM(M)
Analytical Date: 12/20/17 10:43
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	3.0	--	1

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 12/21/17 12:46
Analyst: NS

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 504.1
Extraction Date: 12/21/17 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	1	A

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C-SIM(M)
Analytical Date: 12/20/17 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1074947-5					
1,4-Dioxane	ND		ug/l	3.0	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/17 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074949-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.8	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	2.5	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.5	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.5	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/17 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074949-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	--
1,3-Dichlorobenzene	ND		ug/l	2.5	--
1,4-Dichlorobenzene	ND		ug/l	2.5	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	5.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	5.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	5.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	5.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.5	--
Tetrahydrofuran	ND		ug/l	5.0	--
2,2-Dichloropropane	ND		ug/l	2.5	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.5	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	2.5	--
n-Butylbenzene	ND		ug/l	0.50	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/17 08:30
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074949-5					
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	2.5	--
o-Chlorotoluene	ND		ug/l	2.5	--
p-Chlorotoluene	ND		ug/l	2.5	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	2.5	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	2.5	--
1,2,4-Trichlorobenzene	ND		ug/l	2.5	--
1,3,5-Trimethylbenzene	ND		ug/l	2.5	--
1,2,4-Trimethylbenzene	ND		ug/l	2.5	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	2.5	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	97		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 12/21/17 11:15
Analyst: NS

Extraction Method: EPA 504.1
Extraction Date: 12/21/17 10:24

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1075358-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1074947-3 WG1074947-4								
1,4-Dioxane	110		110		70-130	0		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074949-3 WG1074949-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	120		110		70-130	9		20
Chloroform	120		120		70-130	0		20
Carbon tetrachloride	100		100		63-132	0		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	100		100		63-130	0		20
1,1,2-Trichloroethane	110		120		70-130	9		20
Tetrachloroethene	120		120		70-130	0		20
Chlorobenzene	120		120		75-130	0		25
Trichlorofluoromethane	100		100		62-150	0		20
1,2-Dichloroethane	100		110		70-130	10		20
1,1,1-Trichloroethane	120		110		67-130	9		20
Bromodichloromethane	100		100		67-130	0		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	110		110		70-130	0		20
Bromoform	89		82		54-136	8		20
1,1,2,2-Tetrachloroethane	98		100		67-130	2		20
Benzene	110		110		70-130	0		25
Toluene	120		120		70-130	0		25
Ethylbenzene	110		110		70-130	0		20
Chloromethane	89		87		64-130	2		20
Bromomethane	98		97		39-139	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074949-3 WG1074949-4								
Vinyl chloride	100		100		55-140	0		20
Chloroethane	100		99		55-138	1		20
1,1-Dichloroethene	120		110		61-145	9		25
Trichloroethene	110		110		70-130	0		25
1,2-Dichlorobenzene	110		110		70-130	0		20
1,3-Dichlorobenzene	120		120		70-130	0		20
1,4-Dichlorobenzene	110		110		70-130	0		20
Methyl tert butyl ether	97		100		63-130	3		20
p/m-Xylene	120		115		70-130	4		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	120		120		70-130	0		20
Dibromomethane	110		110		70-130	0		20
1,4-Dichlorobutane	93		89		70-130	4		20
1,2,3-Trichloropropane	98		100		64-130	2		20
Styrene	115		115		70-130	0		20
Dichlorodifluoromethane	94		88		36-147	7		20
Acetone	67		77		58-148	14		20
Carbon disulfide	98		95		51-130	3		20
2-Butanone	82		88		63-138	7		20
Vinyl acetate	95		97		70-130	2		20
4-Methyl-2-pentanone	84		92		59-130	9		20
2-Hexanone	77		89		57-130	14		20
Ethyl methacrylate	99		100		70-130	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074949-3 WG1074949-4								
Acrylonitrile	96		100		70-130	4		20
Bromochloromethane	120		120		70-130	0		20
Tetrahydrofuran	84		88		58-130	5		20
2,2-Dichloropropane	110		100		63-133	10		20
1,2-Dibromoethane	110		110		70-130	0		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	110		110		64-130	0		20
Bromobenzene	110		110		70-130	0		20
n-Butylbenzene	110		120		53-136	9		20
sec-Butylbenzene	110		110		70-130	0		20
tert-Butylbenzene	110		110		70-130	0		20
o-Chlorotoluene	110		100		70-130	10		20
p-Chlorotoluene	110		110		70-130	0		20
1,2-Dibromo-3-chloropropane	93		92		41-144	1		20
Hexachlorobutadiene	**140**	Q	**150**	Q	63-130	7		20
Isopropylbenzene	110		110		70-130	0		20
p-Isopropyltoluene	110		110		70-130	0		20
Naphthalene	94		100		70-130	6		20
n-Propylbenzene	110		110		69-130	0		20
1,2,3-Trichlorobenzene	120		120		70-130	0		20
1,2,4-Trichlorobenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	110		110		64-130	0		20
1,2,4-Trimethylbenzene	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074949-3 WG1074949-4								
trans-1,4-Dichloro-2-butene	77		75		70-130	3		20
Ethyl ether	100		110		59-134	10		20
Tert-Butyl Alcohol	72		76		70-130	5		20
Tertiary-Amyl Methyl Ether	99		100		66-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		89		70-130
Toluene-d8	107		104		70-130
4-Bromofluorobenzene	98		89		70-130
Dibromofluoromethane	101		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 01		Batch: WG1075358-2						
1,2-Dibromoethane	92		-		80-120	-			A
1,2-Dibromo-3-chloropropane	94		-		80-120	-			A

Matrix Spike Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

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): 01 QC Batch ID: WG1075358-3 WG1075358-4 QC Sample: L1744626-32 Client ID: MS Sample													
1,2-Dibromoethane	ND	0.255	0.250	98		0.279	107		80-120	11		20	A
1,2-Dibromo-3-chloropropane	ND	0.255	0.222	87		0.255	98		80-120	14		20	A

SEMIVOLATILES

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 12/21/17 14:30
Analyst: SZ

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 12/20/17 10:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01 Date Collected: 12/15/17 10:00

Client ID: HA-C2(OW)-NPDES_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	41		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	95		15-120
2,4,6-Tribromophenol	111		10-120
4-Terphenyl-d14	90		41-149

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 12/21/17 12:42
Analyst: KL

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 12/20/17 11:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	2.3		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	0.86		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	0.48		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	0.19		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	0.45		ug/l	0.10	--	1
Phenanthrene	0.94		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	0.61		ug/l	0.10	--	1
1-Methylnaphthalene	0.25		ug/l	0.10	--	1
2-Methylnaphthalene	0.26		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01 Date Collected: 12/15/17 10:00

Client ID: HA-C2(OW)-NPDES_2017-1215 Date Received: 12/15/17

Sample Location: CAMBRIDGE, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	37		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	75		15-120
2,4,6-Tribromophenol	81		10-120
4-Terphenyl-d14	79		41-149

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/21/17 10:31
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 10:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074914-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/21/17 10:31
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 10:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074914-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/21/17 10:31
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 10:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074914-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Tentatively Identified Compounds

Total TIC Compounds	5.53	J	ug/l
Unknown	5.53	J	ug/l

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/21/17 10:31
Analyst: SZ

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 10:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1074914-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	55		21-120
Phenol-d6	39		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	102		15-120
2,4,6-Tribromophenol	103		10-120
4-Terphenyl-d14	92		41-149

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 12/21/17 09:17
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 11:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1074917-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 12/21/17 09:17
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 12/20/17 11:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1074917-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	49		21-120
Phenol-d6	34		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	81		15-120
2,4,6-Tribromophenol	84		10-120
4-Terphenyl-d14	81		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074914-2 WG1074914-3								
Acenaphthene	89		90		37-111	1		30
Benzidine	17		31		10-75	**58**	Q	30
1,2,4-Trichlorobenzene	82		81		39-98	1		30
Hexachlorobenzene	97		105		40-140	8		30
Bis(2-chloroethyl)ether	86		86		40-140	0		30
2-Chloronaphthalene	97		97		40-140	0		30
1,2-Dichlorobenzene	74		74		40-140	0		30
1,3-Dichlorobenzene	71		71		40-140	0		30
1,4-Dichlorobenzene	72		71		36-97	1		30
3,3'-Dichlorobenzidine	84		77		40-140	9		30
2,4-Dinitrotoluene	111		111		48-143	0		30
2,6-Dinitrotoluene	118		122		40-140	3		30
Azobenzene	99		111		40-140	11		30
Fluoranthene	94		94		40-140	0		30
4-Chlorophenyl phenyl ether	96		99		40-140	3		30
4-Bromophenyl phenyl ether	97		105		40-140	8		30
Bis(2-chloroisopropyl)ether	86		85		40-140	1		30
Bis(2-chloroethoxy)methane	99		97		40-140	2		30
Hexachlorobutadiene	74		76		40-140	3		30
Hexachlorocyclopentadiene	69		70		40-140	1		30
Hexachloroethane	70		69		40-140	1		30
Isophorone	100		98		40-140	2		30
Naphthalene	81		84		40-140	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074914-2 WG1074914-3								
Nitrobenzene	91		91		40-140	0		30
NDPA/DPA	99		109		40-140	10		30
n-Nitrosodi-n-propylamine	99		96		29-132	3		30
Bis(2-ethylhexyl)phthalate	114		117		40-140	3		30
Butyl benzyl phthalate	104		107		40-140	3		30
Di-n-butylphthalate	102		105		40-140	3		30
Di-n-octylphthalate	103		108		40-140	5		30
Diethyl phthalate	100		101		40-140	1		30
Dimethyl phthalate	111		109		40-140	2		30
Benzo(a)anthracene	96		96		40-140	0		30
Benzo(a)pyrene	91		92		40-140	1		30
Benzo(b)fluoranthene	89		94		40-140	5		30
Benzo(k)fluoranthene	91		92		40-140	1		30
Chrysene	95		97		40-140	2		30
Acenaphthylene	104		105		45-123	1		30
Anthracene	97		97		40-140	0		30
Benzo(ghi)perylene	104		96		40-140	8		30
Fluorene	98		101		40-140	3		30
Phenanthrene	96		94		40-140	2		30
Dibenzo(a,h)anthracene	104		96		40-140	8		30
Indeno(1,2,3-cd)pyrene	108		98		40-140	10		30
Pyrene	92		93		26-127	1		30
Biphenyl	103		104		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074914-2 WG1074914-3								
Aniline	60		59		40-140	2		30
4-Chloroaniline	61		53		40-140	14		30
1-Methylnaphthalene	90		92		41-103	2		30
2-Nitroaniline	124		124		52-143	0		30
3-Nitroaniline	78		69		25-145	12		30
4-Nitroaniline	99		108		51-143	9		30
Dibenzofuran	94		94		40-140	0		30
2-Methylnaphthalene	89		91		40-140	2		30
n-Nitrosodimethylamine	51		58		22-74	13		30
2,4,6-Trichlorophenol	112		113		30-130	1		30
p-Chloro-m-cresol	**108**	Q	**109**	Q	23-97	1		30
2-Chlorophenol	87		88		27-123	1		30
2,4-Dichlorophenol	108		106		30-130	2		30
2,4-Dimethylphenol	95		98		30-130	3		30
2-Nitrophenol	115		112		30-130	3		30
4-Nitrophenol	66		68		10-80	3		30
2,4-Dinitrophenol	111		108		20-130	3		30
4,6-Dinitro-o-cresol	125		137		20-164	9		30
Pentachlorophenol	91		98		9-103	7		30
Phenol	43		44		12-110	2		30
2-Methylphenol	85		82		30-130	4		30
3-Methylphenol/4-Methylphenol	81		80		30-130	1		30
2,4,5-Trichlorophenol	117		115		30-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1074914-2 WG1074914-3								
Benzoic Acid	42		44		10-164	5		30
Benzyl Alcohol	82		82		26-116	0		30
Carbazole	101		102		55-144	1		30
Pyridine	32		42		10-66	27		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		55		21-120
Phenol-d6	40		40		10-120
Nitrobenzene-d5	90		89		23-120
2-Fluorobiphenyl	96		99		15-120
2,4,6-Tribromophenol	103		115		10-120
4-Terphenyl-d14	88		89		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1074917-2 WG1074917-3								
Acenaphthene	85		88		40-140	3		40
2-Chloronaphthalene	89		91		40-140	2		40
Fluoranthene	88		91		40-140	3		40
Hexachlorobutadiene	72		75		40-140	4		40
Naphthalene	82		84		40-140	2		40
Benzo(a)anthracene	95		98		40-140	3		40
Benzo(a)pyrene	90		92		40-140	2		40
Benzo(b)fluoranthene	91		91		40-140	0		40
Benzo(k)fluoranthene	92		92		40-140	0		40
Chrysene	93		95		40-140	2		40
Acenaphthylene	96		99		40-140	3		40
Anthracene	97		100		40-140	3		40
Benzo(ghi)perylene	98		102		40-140	4		40
Fluorene	88		91		40-140	3		40
Phenanthrene	89		92		40-140	3		40
Dibenzo(a,h)anthracene	102		104		40-140	2		40
Indeno(1,2,3-cd)pyrene	104		107		40-140	3		40
Pyrene	86		89		40-140	3		40
1-Methylnaphthalene	87		89		40-140	2		40
2-Methylnaphthalene	85		88		40-140	3		40
Pentachlorophenol	84		88		40-140	5		40
Hexachlorobenzene	84		87		40-140	4		40
Hexachloroethane	69		69		40-140	0		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1074917-2 WG1074917-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	49		49		21-120
Phenol-d6	35		35		10-120
Nitrobenzene-d5	88		90		23-120
2-Fluorobiphenyl	77		79		15-120
2,4,6-Tribromophenol	81		82		10-120
4-Terphenyl-d14	78		79		41-149

PCBS

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA

Matrix: Water
Analytical Method: 5,608
Analytical Date: 12/21/17 14:01
Analyst: JW

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified
Extraction Method: EPA 608
Extraction Date: 12/21/17 03:10
Cleanup Method: EPA 3665A
Cleanup Date: 12/21/17
Cleanup Method: EPA 3660B
Cleanup Date: 12/21/17

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		30-150	A
Decachlorobiphenyl	86		30-150	A

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 5,608
Analytical Date: 12/21/17 14:13
Analyst: JW

Extraction Method: EPA 608
Extraction Date: 12/21/17 03:10
Cleanup Method: EPA 3665A
Cleanup Date: 12/21/17
Cleanup Method: EPA 3660B
Cleanup Date: 12/21/17

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1075198-1						
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	61		30-150	A
Decachlorobiphenyl	72		30-150	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1075198-2									
Aroclor 1016	78		-		30-150	-		30	A
Aroclor 1260	88		-		30-150	-		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68				30-150	A
Decachlorobiphenyl	83				30-150	A

Matrix Spike Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1075198-3 QC Sample: L1700012-108 Client ID: MS Sample													
Aroclor 1016	ND	3.12	2.41	77		-	-		40-126	-		30	A
Aroclor 1260	ND	3.12	2.68	86		-	-		40-127	-		30	A

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67				30-150	A
Decachlorobiphenyl	83				30-150	A

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits	
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1075198-4 QC Sample: L1700012-108 Client ID: DUP Sample							
Aroclor 1016	ND	ND	ug/l	NC		30	A
Aroclor 1221	ND	ND	ug/l	NC		30	A
Aroclor 1232	ND	ND	ug/l	NC		30	A
Aroclor 1242	ND	ND	ug/l	NC		30	A
Aroclor 1248	ND	ND	ug/l	NC		30	A
Aroclor 1254	ND	ND	ug/l	NC		30	A
Aroclor 1260	ND	ND	ug/l	NC		30	A

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		70		30-150	A
Decachlorobiphenyl	85		90		30-150	A

METALS

Project Name: 50 ROGERS STREET
Lab Number: L1746498
Project Number: 34250-840
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA
Matrix: Water
Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Iron, Total	4.99		mg/l	0.050	--	1	12/20/17 12:20	12/20/17 23:30	EPA 3005A	19,200.7	AB
Lead, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	12/20/17 11:10	12/20/17 21:07	EPA 245.1	3,245.1	EA
Nickel, Total	ND		mg/l	0.00200	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	12/20/17 12:20	12/20/17 18:05	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	459		mg/l	0.660	NA	1	12/20/17 12:20	12/20/17 23:30	EPA 3005A	19,200.7	AB
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		12/20/17 18:05	NA	107,-	

Project Name: 50 ROGERS STREET **Lab Number:** L1746498

Project Number: 34250-840 **Report Date:** 12/21/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1074891-1										
Mercury, Total	ND		mg/l	0.00020	--	1	12/20/17 11:10	12/20/17 20:19	3,245.1	EA

Prep Information

Digestion Method: EPA 245.1

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1074923-1										
Antimony, Total	ND		mg/l	0.00400	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Lead, Total	ND		mg/l	0.00050	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	12/20/17 12:20	12/20/17 16:47	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1074929-1										
Iron, Total	ND		mg/l	0.050	--	1	12/20/17 12:20	12/20/17 20:42	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1074929-1										
Hardness	ND		mg/l	0.660	NA	1	12/20/17 12:20	12/20/17 20:42	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-840

Lab Number: L1746498

Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1074891-2								
Mercury, Total	113		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1074923-2								
Antimony, Total	98		-		85-115	-		
Arsenic, Total	101		-		85-115	-		
Cadmium, Total	103		-		85-115	-		
Chromium, Total	105		-		85-115	-		
Copper, Total	103		-		85-115	-		
Lead, Total	112		-		85-115	-		
Nickel, Total	103		-		85-115	-		
Selenium, Total	101		-		85-115	-		
Silver, Total	100		-		85-115	-		
Zinc, Total	99		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1074929-2								
Iron, Total	107		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1074929-2								
Hardness	106		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

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 QC Batch ID: WG1074891-3 QC Sample: L1746497-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00492	98		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074891-5 QC Sample: L1746497-02 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00474	95		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074923-3 WG1074923-4 QC Sample: L1745390-02 Client ID: MS Sample												
Antimony, Total	ND	0.5	0.4980	100		0.4945	99		70-130	1		20
Arsenic, Total	ND	0.12	0.1233	103		0.1221	102		70-130	1		20
Cadmium, Total	ND	0.051	0.05126	100		0.05179	102		70-130	1		20
Chromium, Total	ND	0.2	0.2068	103		0.2063	103		70-130	0		20
Copper, Total	ND	0.25	0.2575	103		0.2565	103		70-130	0		20
Lead, Total	0.00144	0.51	0.5742	112		0.5699	111		70-130	1		20
Nickel, Total	ND	0.5	0.5092	102		0.5052	101		70-130	1		20
Selenium, Total	ND	0.12	0.1244	104		0.1146	96		70-130	8		20
Silver, Total	ND	0.05	0.05025	100		0.05016	100		70-130	0		20
Zinc, Total	ND	0.5	0.5012	100		0.5249	105		70-130	5		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074923-5 QC Sample: L1746497-01 Client ID: MS Sample										
Antimony, Total	ND	0.5	0.4895	98		-	-	70-130	-	20
Arsenic, Total	0.00232	0.12	0.1241	101		-	-	70-130	-	20
Cadmium, Total	ND	0.051	0.05069	99		-	-	70-130	-	20
Chromium, Total	0.00289	0.2	0.2051	101		-	-	70-130	-	20
Copper, Total	0.00822	0.25	0.2589	100		-	-	70-130	-	20
Lead, Total	0.00416	0.51	0.5526	108		-	-	70-130	-	20
Nickel, Total	0.00414	0.5	0.4994	99		-	-	70-130	-	20
Selenium, Total	ND	0.12	0.1204	100		-	-	70-130	-	20
Silver, Total	ND	0.05	0.04883	98		-	-	70-130	-	20
Zinc, Total	ND	0.5	0.5277	106		-	-	70-130	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074929-3 WG1074929-4 QC Sample: L1745390-02 Client ID: MS Sample										
Iron, Total	ND	1	1.06	106		1.07	107	75-125	1	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074929-3 WG1074929-4 QC Sample: L1745390-02 Client ID: MS Sample										
Hardness	16.8	66.2	86.0	105		85.6	104	75-125	0	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074929-7 QC Sample: L1746497-01 Client ID: MS Sample										
Iron, Total	3.36	1	3.58	**22**	Q	-	-	75-125	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074929-7 QC Sample: L1746497-01 Client ID: MS Sample										
Hardness	281	66.2	344	95		-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074891-4 QC Sample: L1746497-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074891-6 QC Sample: L1746497-02 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074923-6 QC Sample: L1746497-01 Client ID: DUP Sample						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.00232	0.00198	mg/l	16		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	0.00289	0.00220	mg/l	**27**	Q	20
Copper, Total	0.00822	0.00755	mg/l	9		20
Lead, Total	0.00416	0.00371	mg/l	11		20
Nickel, Total	0.00414	0.00373	mg/l	10		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1074929-8 QC Sample: L1746497-01 Client ID: DUP Sample						
Iron, Total	3.36	2.69	mg/l	**22**	Q	20

INORGANICS
&
MISCELLANEOUS

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

SAMPLE RESULTS

Lab ID: L1746498-01
Client ID: HA-C2(OW)-NPDES_2017-1215
Sample Location: CAMBRIDGE, MA
Matrix: Water

Date Collected: 12/15/17 10:00
Date Received: 12/15/17
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	13.		mg/l	5.0	NA	1	-	12/19/17 04:10	121,2540D	VB
Cyanide, Total	ND		mg/l	0.005	--	1	12/17/17 13:30	12/18/17 10:35	121,4500CN-CE	LH
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	12/15/17 23:20	121,4500CL-D	CW
Nitrogen, Ammonia	1.44		mg/l	0.075	--	1	12/20/17 04:00	12/20/17 15:37	121,4500NH3-BH	JO
TPH, SGT-HEM	ND		mg/l	5.20	--	1.3	12/19/17 17:00	12/19/17 22:00	74,1664A	ML
Phenolics, Total	ND		mg/l	0.030	--	1	12/19/17 11:45	12/19/17 15:29	4,420.1	AW
Chromium, Hexavalent	ND		mg/l	0.010	--	1	12/16/17 00:44	12/16/17 01:05	1,7196A	UN
Anions by Ion Chromatography - Westborough Lab										
Chloride	950.		mg/l	12.5	--	25	-	12/20/17 19:35	44,300.0	JT

Project Name: 50 ROGERS STREET
Project Number: 34250-840
Lab Number: L1746498
Report Date: 12/21/17

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1073403-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	12/15/17 23:20	121,4500CL-D	CW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1073409-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	12/16/17 00:44	12/16/17 01:03	1,7196A	UN
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1073677-1										
Cyanide, Total	ND		mg/l	0.005	--	1	12/17/17 13:30	12/18/17 10:05	121,4500CN-CE	LH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1074164-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	12/19/17 04:10	121,2540D	VB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1074433-1										
Phenolics, Total	ND		mg/l	0.030	--	1	12/19/17 11:45	12/19/17 14:33	4,420.1	AW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1074559-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	12/19/17 17:00	12/19/17 22:00	74,1664A	ML
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1074685-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	12/20/17 04:00	12/20/17 14:50	121,4500NH3-BH	JO
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1075294-1										
Chloride	ND		mg/l	0.500	--	1	-	12/20/17 11:35	44,300.0	JT

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1073403-2								
Chlorine, Total Residual	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1073409-2								
Chromium, Hexavalent	97		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1073677-2								
Cyanide, Total	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1074433-2								
Phenolics, Total	98		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1074559-2								
TPH	83		-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1074685-2								
Nitrogen, Ammonia	88		-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1075294-2								
Chloride	102		-		90-110	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073403-4 QC Sample: L1746437-01 Client ID: MS Sample												
Chlorine, Total Residual	ND	0.248	ND	**0**	Q	-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073409-4 QC Sample: L1746498-01 Client ID: HA-C2(OW)-NPDES_2017-1215												
Chromium, Hexavalent	ND	0.1	0.086	86		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073677-4 QC Sample: L1746497-02 Client ID: MS Sample												
Cyanide, Total	0.009	0.2	0.207	99		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074433-4 QC Sample: L1746498-01 Client ID: HA-C2(OW)-NPDES_2017-1215												
Phenolics, Total	ND	0.4	0.29	74		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074559-4 QC Sample: L1745309-01 Client ID: MS Sample												
TPH	6.10	20.4	21.7	77		-	-		64-132	-		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074685-4 QC Sample: L1744874-09 Client ID: MS Sample												
Nitrogen, Ammonia	0.129	4	3.85	93		-	-		80-120	-		20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1075294-3 QC Sample: L1744378-01 Client ID: MS Sample												
Chloride	6660	1000	7640	98		-	-		90-110	-		18

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073403-3 QC Sample: L1746437-01 Client ID: DUP Sample						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073409-3 QC Sample: L1746498-01 Client ID: HA-C2(OW)-NPDES_2017-1215						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1073677-3 QC Sample: L1746497-01 Client ID: DUP Sample						
Cyanide, Total	0.007	0.007	mg/l	0		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074164-2 QC Sample: L1746540-01 Client ID: DUP Sample						
Solids, Total Suspended	180	170	mg/l	6		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074433-3 QC Sample: L1746498-01 Client ID: HA-C2(OW)-NPDES_2017-1215						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074559-3 QC Sample: L1745309-01 Client ID: DUP Sample						
TPH	6.10	5.70	mg/l	7		34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1074685-3 QC Sample: L1744874-09 Client ID: DUP Sample						
Nitrogen, Ammonia	0.129	0.231	mg/l	**57**	Q	20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1075294-4 QC Sample: L1744378-01 Client ID: DUP Sample						
Chloride	6660	6640	mg/l	0		18

Project Name: 50 ROGERS STREET
Project Number: 34250-840

Lab Number: L1746498
Report Date: 12/21/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1746498-01A	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-SIM(14),8260(14)
L1746498-01B	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-SIM(14),8260(14)
L1746498-01C	Vial HCl preserved	A	NA		4.5	Y	Absent		8260-SIM(14),8260(14)
L1746498-01D	Vial Na2S2O3 preserved	A	NA		4.5	Y	Absent		504(14)
L1746498-01E	Vial Na2S2O3 preserved	A	NA		4.5	Y	Absent		504(14)
L1746498-01F	Plastic 250ml HNO3 preserved	A	<2	<2	4.5	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),CR-2008T(180),PB-2008T(180),SB-2008T(180)
L1746498-01G	Plastic 500ml H2SO4 preserved	A	NA		4.5	Y	Absent		NH3-4500(28)
L1746498-01H	Plastic 250ml NaOH preserved	A	>12	>12	4.5	Y	Absent		TCN-4500(14)
L1746498-01J	Plastic 950ml unpreserved	A	7	7	4.5	Y	Absent		TSS-2540(7)
L1746498-01K	Plastic 950ml unpreserved	A	7	7	4.5	Y	Absent		CL-300(28),HEXCR-7196(1),HOLD-WETCHEM(),TRC-4500(1)
L1746498-01L	Amber 950ml H2SO4 preserved	A	<2	<2	4.5	Y	Absent		TPHENOL-420(28)
L1746498-01M	Amber 1000ml HCl preserved	A	NA		4.5	Y	Absent		TPH-1664(28)
L1746498-01N	Amber 1000ml HCl preserved	A	NA		4.5	Y	Absent		TPH-1664(28)
L1746498-01P	Amber 1000ml unpreserved	A	7	7	4.5	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1746498-01Q	Amber 1000ml unpreserved	A	7	7	4.5	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1746498-01R	Amber 1000ml Na2S2O3	A	7	7	4.5	Y	Absent		PCB-608(7)
L1746498-01S	Amber 1000ml Na2S2O3	A	7	7	4.5	Y	Absent		PCB-608(7)

*Values in parentheses indicate holding time in days

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746498
Project Number:	34250-840	**Report Date:**	12/21/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746498
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Data Qualifiers

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

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

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

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

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

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

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

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

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

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1746498
Project Number:	34250-840	**Report Date:**	12/21/17

REFERENCES

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

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

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

5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).

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.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

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

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

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

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

CHAIN OF CUSTODY

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: 12/15/17

ALPHA Job #: L1746498

H&A Information

H&A Client: ARE-MA Region No. 21 LLC
H&A Address: 465 Medford St. Suite 2200
Boston, MA 02129
H&A Phone: 617-886-7359
H&A Fax: gdaylor@haleyaldrich.com
H&A Email: lpenwell@haleyaldrich.com

These samples have been previously analyzed by Alpha ☐

Project Information

Project Name: 50 Rogers Street
Project Location: Cambridge, MA
Project #: 34250-840
(Use Project name as Project #) ☐
Project Manager: Rebecca Higgins/Lee Penwell
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:

Regulatory Requirements (Program/Criteria)

MA

Note: Select State from menu & identify criteria.

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

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

Other project specific requirements/comments:

Please sample per EPA Approved 2017 RGP Permit methods

coc edits by Gina Hall AAL 12/20/17

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1. TSS-2540	2. TRC-4500	3. TCN-4500 HOLD PACN & CAN	4. 504	5. 8260 & 8260 SIM for Dioxane	6. HAXCR-3500 & Trivalnat Chromium	7. TPHENOL-420	8. 8270TCL (including Diethylhexylphthalate)	9. 8270TCL-SIM	10. CL-300	11 Total Metals-Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn, Fe, Hg	12. Ammonia	13. Total Hardness	14. A2-ALCOHOL (Ethanol)	15. TPH-1664	16. PCB-608	Total # Bottles
L6498-01	HA-C2(OW)-NPDES_2017-1215	12/15/17	1000	AQ		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Hex is method 7196 for NPDES
Do NOT analyze for Ethanol

Sample Filtration

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

Sample Specific Comments

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
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	12/15/17		12/15/17 1613
	12/15/17 1713		12/15/17 1700
	12/15/17 1900		12/15/17 1900

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# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

CHAIN OF CUSTODY

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: 12/15/17

ALPHA Job # L1746498

H&A Information

H&A Client:	ARE-MA Region No. 21 LLC
H&A Address:	465 Medford St. Suite 2200
	Boston, MA 02129
H&A Phone:	617-886-7359
H&A Fax:	gdaylor@haleyaldrich.com
H&A Email:	lpenwell@haleyaldrich.com

Project Information

Project Name:	50 Rogers Street
Project Location:	Cambridge, MA
Project #:	34250-840
(Use Project name as Project #)	☐
Project Manager:	Rebecca Higgins/Lee Penwell
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

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 sample per EPA Approved 2017 RGP Permit methods

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1. TSS-2540	2. TRC-4500	3. TCN-4500 HOLD PACN & CAN	4. 504	5. 8260 & 8260 SIM for Dioxane	6. HAXCR-3500 & Trivalnet Chromium	7. TPHENOL-420	8. 8270TCL (including Diethylhexylphthalate)	9. 8270TCL-SIM	10. CL-300	11. Total Metals-Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn, Fe, Hg	12. Ammonia	13. Total Hardness	14. A2-ALCOHOL (Ethanol)	15. TPH-1664	16. PCB-608
L1746498-01	HA-C2(OW)-NPDES_2017-1215	12/15/17	1000	AQ		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Sample Filtration

☐ Done
☐ Lab to do

Preservation

☐ Lab to do

(Please Specify below)

Sample Specific Comments

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
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
	12/15/17		12/15/17 1613
	12/15/17 1613		12/15/17 1700
	12/15/17 1900		12/15/17 0900

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# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

ANALYTICAL REPORT

Lab Number:	L1813049
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Penwell
Phone:	(617) 886-7359
Project Name:	50 ROGERS STREET
Project Number:	34250-844
Report Date:	04/18/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1813049-01	2018-0413-CHARLES_CAM017	WATER	CAMBRIDGE, MA	04/13/18 08:30	04/13/18

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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

Please contact Client Services at 800-624-9220 with any questions.

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: 04/18/18

METALS

Project Name: 50 ROGERS STREET
Lab Number: L1813049
Project Number: 34250-844
Report Date: 04/18/18

SAMPLE RESULTS

Lab ID: L1813049-01
Client ID: 2018-0413-CHARLES_CAM017
Sample Location: CAMBRIDGE, MA
Date Collected: 04/13/18 08:30
Date Received: 04/13/18
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	0.00400	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Copper, Total	0.00193		mg/l	0.00100	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Iron, Total	0.334		mg/l	0.050	--	1	04/16/18 08:10	04/16/18 17:50	EPA 3005A	19,200.7	AB
Lead, Total	0.00117		mg/l	0.00050	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	04/17/18 11:05	04/17/18 15:17	EPA 245.1	3,245.1	MG
Nickel, Total	ND		mg/l	0.00200	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	04/16/18 08:10	04/16/18 13:15	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	82.3		mg/l	0.660	NA	1	04/16/18 08:10	04/16/18 17:50	EPA 3005A	19,200.7	AB

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813049
Report Date: 04/18/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1106752-1										
Antimony, Total	ND		mg/l	0.00400	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Lead, Total	ND		mg/l	0.00050	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	04/16/18 08:10	04/16/18 12:56	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1106753-1										
Iron, Total	ND		mg/l	0.050	--	1	04/16/18 08:10	04/16/18 17:13	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1106753-1										
Hardness	ND		mg/l	0.660	NA	1	04/16/18 08:10	04/16/18 17:13	19,200.7	AB

Prep Information

Digestion Method: EPA 3005A

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813049
Report Date: 04/18/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1107139-1										
Mercury, Total	ND		mg/l	0.0002	--	1	04/17/18 11:05	04/17/18 15:13	3,245.1	MG

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-844

Lab Number: L1813049

Report Date: 04/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1106752-2								
Antimony, Total	99		-		85-115	-		
Arsenic, Total	103		-		85-115	-		
Cadmium, Total	109		-		85-115	-		
Copper, Total	95		-		85-115	-		
Lead, Total	100		-		85-115	-		
Nickel, Total	95		-		85-115	-		
Selenium, Total	109		-		85-115	-		
Silver, Total	99		-		85-115	-		
Zinc, Total	103		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1106753-2								
Iron, Total	103		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1106753-2								
Hardness	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1107139-2								
Mercury, Total	90		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

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 QC Batch ID: WG1106752-3 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017												
Antimony, Total	ND	0.5	0.5696	114		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1341	112		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05990	117		-	-		70-130	-		20
Copper, Total	0.00193	0.25	0.2547	101		-	-		70-130	-		20
Lead, Total	0.00117	0.51	0.5484	107		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.5096	102		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1476	123		-	-		70-130	-		20
Silver, Total	ND	0.05	0.05291	106		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5584	112		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1106753-3 QC Sample: L1812043-01 Client ID: MS Sample												
Iron, Total	ND	1	1.02	102		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1106753-3 QC Sample: L1812043-01 Client ID: MS Sample												
Hardness	159	66.2	220	92		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1107139-3 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017												
Mercury, Total	ND	0.005	0.0048	96		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1107139-5 QC Sample: L1813184-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.0048	97		-	-		70-130	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1106752-4 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00193	0.00206	mg/l	7		20
Lead, Total	0.00117	0.00121	mg/l	3		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1106753-4 QC Sample: L1812043-01 Client ID: DUP Sample						
Iron, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1107139-4 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017						
Mercury, Total	ND	ND	mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1107139-6 QC Sample: L1813184-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

SAMPLE RESULTS

Lab ID: L1813049-01
Client ID: 2018-0413-CHARLES_CAM017
Sample Location: CAMBRIDGE, MA

Date Collected: 04/13/18 08:30
Date Received: 04/13/18
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										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/14/18 15:50	04/16/18 20:07	121,4500NH3-BH	AT

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813049
Report Date: 04/18/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1106531-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/14/18 15:50	04/16/18 20:03	121,4500NH3-BH	AT

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1106531-2								
Nitrogen, Ammonia	92		-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1106531-4 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017												
Nitrogen, Ammonia	ND	4	3.60	90		-	-		80-120	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1106531-3 QC Sample: L1813049-01 Client ID: 2018-0413-CHARLES_CAM017						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813049
Report Date: 04/18/18

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(*)
L1813049-01A	Plastic 250ml HNO3 preserved	A	<2	<2	3.0	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),PB-2008T(180),SB-2008T(180)
L1813049-01B	Plastic 250ml HNO3 preserved	A	<2	<2	3.0	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),AS-2008T(180),HG-U(28),SE-2008T(180),PB-2008T(180),SB-2008T(180)
L1813049-01C	Plastic 500ml H2SO4 preserved	A	<2	<2	3.0	Y	Absent		NH3-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813049
Project Number:	34250-844	**Report Date:**	04/18/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813049
Project Number:	34250-844	**Report Date:**	04/18/18

Data Qualifiers

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

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

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

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

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

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

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

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

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

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813049
Project Number:	34250-844	**Report Date:**	04/18/18

REFERENCES

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

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

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

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; 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, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: 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**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

ALPHA ANALYTICAL

CHAIN OF CUSTODY

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: 4/13/18

ALPHA Job #: L1813049

H&A Information
- H&A Client: ARE-MA Region No. 21 LLC
- H&A Address: 465 Medford St, Suite 2200
- Boston, MA 02129
- H&A Phone: 617-886-7359
- H&A Fax: gdaylor@haleyaldrich.com
- H&A Email: lpenwell@haleyaldrich.com

Project Information
- Project Name: 50 Rogers Street
- Project Location: Cambridge, MA
- Project #: 34250-844
- (Use Project name as Project #) ☐
- Project Manager: Rebecca Higgins/Lee Penwell
- 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

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 sample per EPA Approved 2017 RGP Permit methods

Please specify Metals or TAL.

Sb, As, Cd, Total Cr, Cr III, Cr VI, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn

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's Initials	1. Total metals	2. Ammonia nitrogen	3. Hardness	Sample Specific Comments	Total Bottles
13049-01	2018-0413-Charles-CAM017	4/13/18	830	AQ	PJLA	X	X	X		3
									pH =	7.51
									temperature =	9.0°C
										48.2°F

Container Type: P P P
Preservative: C D C

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
	4/13/18 905	M. Cuttle	4/13/18 1630
M. Cuttle	4/13/18 1630		4/13/18 1705
	4/13/18 1858		4/13/18 1855

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# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

ANALYTICAL REPORT

Lab Number:	L1813321
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Penwell
Phone:	(617) 886-7359
Project Name:	50 ROGERS STREET
Project Number:	34250-844
Report Date:	04/23/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1813321-01	2018-0417-CHARLES-CAM017	WATER	CAMBRIDGE, MA	04/17/18 08:30	04/17/18

Project Name: 50 ROGERS STREET **Lab Number:** L1813321
Project Number: 34250-844 **Report Date:** 04/23/18

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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

Please contact Client Services at 800-624-9220 with any questions.

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

Authorized Signature:  Amita Naik

Title: Technical Director/Representative Date: 04/23/18

METALS

Project Name: 50 ROGERS STREET
Lab Number: L1813321
Project Number: 34250-844
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1813321-01
Client ID: 2018-0417-CHARLES-CAM017
Sample Location: CAMBRIDGE, MA
Date Collected: 04/17/18 08:30
Date Received: 04/17/18
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											
Chromium, Total	0.00106		mg/l	0.00100	--	1	04/18/18 09:45	04/19/18 11:31	EPA 3005A	3,200.8	AM
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		04/19/18 11:31	NA	107,-	

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813321
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1107466-1										
Chromium, Total	ND		mg/l	0.00100	--	1	04/18/18 09:45	04/18/18 15:09	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-844

Lab Number: L1813321

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1107466-2								
Chromium, Total	98		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

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 QC Batch ID: WG1107466-3 QC Sample: L1813208-01 Client ID: MS Sample												
Chromium, Total	0.0072	0.2	0.2096	101		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1107466-5 QC Sample: L1813208-02 Client ID: MS Sample												
Chromium, Total	ND	0.2	0.2002	100		-	-		70-130	-		20

INORGANICS
&
MISCELLANEOUS

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1813321-01
Client ID: 2018-0417-CHARLES-CAM017
Sample Location: CAMBRIDGE, MA

Date Collected: 04/17/18 08:30
Date Received: 04/17/18
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										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/17/18 11:48	04/18/18 00:14	1,7196A	UN

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813321
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1107358-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/17/18 11:48	04/18/18 00:09	1,7196A	UN

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1107358-2								
Chromium, Hexavalent	96		-		85-115	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1107358-4 QC Sample: L1813321-01 Client ID: 2018-0417-CHARLES-CAM017												
Chromium, Hexavalent	ND	0.1	0.095	95		-	-		85-115	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1107358-3 QC Sample: L1813321-01 Client ID: 2018-0417-CHARLES-CAM017						
Chromium, Hexavalent	ND	ND	mg/l	NC		20

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813321
Report Date: 04/23/18

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(*)
L1813321-01A	Plastic 500ml unpreserved	A	7	7	2.3	Y	Absent		HEXCR-7196(1)
L1813321-01B	Plastic 250ml HNO3 preserved	A	<2	<2	2.3	Y	Absent		CR-2008T(180)
L1813321-01B1	Plastic 250ml HNO3 preserved	A	<2	<2	2.3	Y	Absent		CR-2008T(180)

*Values in parentheses indicate holding time in days

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813321
Project Number:	34250-844	**Report Date:**	04/23/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813321
Project Number:	34250-844	**Report Date:**	04/23/18

Data Qualifiers

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

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

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

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

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

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

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

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

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

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813321
Project Number:	34250-844	**Report Date:**	04/23/18

REFERENCES

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

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

107 Alpha Analytical - In-house calculation method.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; 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, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: 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**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

ALPHA ANALYTICAL

CHAIN OF CUSTODY

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: 4/17/18

ALPHA Job #: L1813321

Project Information	
Project Name:	50 Rogers Street
Project Location:	Cambridge, MA
Project #	34250-844
(Use Project name as Project #) ☐	
Project Manager:	Rebecca Higgins/Lee Penwell
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 #

H&A Information	
H&A Client:	ARE-MA Region No. 21 LLC
H&A Address:	465 Medford St, Suite 2200
	Boston, MA 02129
H&A Phone:	617-886-7359
H&A Fax:	gdaylor@haleyaldrich.com
H&A Email:	lpenwell@haleyaldrich.com

Regulatory Requirements (Program/Criteria)
MA
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 sample per EPA Approved 2017 RGP Permit methods

Please specify Metals or TAL.
Sb, As, Cd, Total Cr, Cr III, Cr VI, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn

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's Initials	~~1-Total metals~~ CR VI, CR III, Total CR	~~2-Ammonia nitrogen~~	[illegible]								Sample Specific Comments	Total Bottles
13321-01	2018-0417-Charles-CAM017	4/17/18	8:30	AQ	NLK	X											3 X
																pH =	6.6
																temperature =	53° F
																total	3

Preservative Code:	Container Code
A = None	P = Plastic
B = HCl	A = Amber Glass
C = HNO_3	V = Vial
D = H_2SO_4	G = Glass
E = NaOH	B = Bacteria Cup
F = MeOH	C = Cube
G = $NaHSO_4$	O = Other
H = $Na_2S_2O_3$	E = Encore
K/E = Zn Ac/NaOH	D = BOD Bottle
O = Other	

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

Container Type	P	~~X~~	~~X~~
Preservative	C	~~X~~	~~X~~

Relinquished By:	Date/Time	Received By:	Date/Time
N. KLAMMEYER [signature]	4/17/18 1631	[signature] AAL	4/17/18 1631
[signature] AAL	4/17/18 1750	[signature]	4/17/18 17:50

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# 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and affiliates and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

ANALYTICAL REPORT

Lab Number:	L1813322
Client:	Haley & Aldrich, Inc. 465 Medford Street, Suite 2200 Charlestown, MA 02129-1400
ATTN:	Lee Penwell
Phone:	(617) 886-7359
Project Name:	50 ROGERS STREET
Project Number:	34250-844
Report Date:	04/23/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

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

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1813322-01	HA-C2_2018-0417	WATER	CAMBRIDGE, MA	04/17/18 11:50	04/17/18
L1813322-02	HA11-01A_2018-0417	WATER	CAMBRIDGE, MA	04/17/18 13:30	04/17/18

Project Name: 50 ROGERS STREET **Lab Number:** L1813322

Project Number: 34250-844 **Report Date:** 04/23/18

MADEP MCP Response Action Analytical Report Certification

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

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

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

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

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

Project Name: 50 ROGERS STREET **Lab Number:** L1813322
Project Number: 34250-844 **Report Date:** 04/23/18

Case Narrative

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

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

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

Please contact Client Services at 800-624-9220 with any questions.

Project Name: 50 ROGERS STREET **Lab Number:** L1813322
Project Number: 34250-844 **Report Date:** 04/23/18

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

L1813322-02 (HA11-01A_2018-0417): The collection date and time on the chain of custody was 17-APR-18 13:30; however, the collection date/time on the container label was 17-APR-18 13:35. At the client's request, the collection date/time is reported as 17-APR-18 13:30.

In reference to question A:

L1813322-02 (HA11-01A_2018-0417): The sample was received above the appropriate pH for EPH analysis. The laboratory added HCl; however, the pH would not adjust into the proper range.

Volatile Organics

In reference to question H:

The initial calibration, associated with L1813322-01 and -02 (all submitted samples), did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane, (0.0012), 2-butanone (0.083), and 4-methyl-2-pentanone (0.0835) as well as the average response factor for 1,4-dioxane, 2-butanone, and 4-methyl-2-pentanone .

The continuing calibration standard, associated with L1813322-01 and -02 (all submitted samples), 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.

VPH

In reference to question I:

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

EPH

In reference to question I:

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

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

Authorized Signature:  Amita Naik

Title: Technical Director/Representative Date: 04/23/18

ORGANICS

VOLATILES

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-01
Client ID: HA-C2_2018-0417
Sample Location: CAMBRIDGE, MA
Date Collected: 04/17/18 11:50
Date Received: 04/17/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/19/18 10:52
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: 50 ROGERS STREET **Lab Number:** L1813322

Project Number: 34250-844 **Report Date:** 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-01 Date Collected: 04/17/18 11:50

Client ID: HA-C2_2018-0417 Date Received: 04/17/18

Sample Location: CAMBRIDGE, 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
Xylene (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
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	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: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-01
Client ID: HA-C2_2018-0417
Sample Location: CAMBRIDGE, MA
Date Collected: 04/17/18 11:50
Date Received: 04/17/18
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
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl 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	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	104		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-02
Client ID: HA11-01A_2018-0417
Sample Location: CAMBRIDGE, MA

Date Collected: 04/17/18 13:30
Date Received: 04/17/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 97,8260C
Analytical Date: 04/19/18 10:27
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: 50 ROGERS STREET **Lab Number:** L1813322

Project Number: 34250-844 **Report Date:** 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-02 Date Collected: 04/17/18 13:30

Client ID: HA11-01A_2018-0417 Date Received: 04/17/18

Sample Location: CAMBRIDGE, 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
Xylene (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
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	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: 50 ROGERS STREET **Lab Number:** L1813322

Project Number: 34250-844 **Report Date:** 04/23/18

SAMPLE RESULTS

Lab ID: L1813322-02 Date Collected: 04/17/18 13:30

Client ID: HA11-01A_2018-0417 Date Received: 04/17/18

Sample Location: CAMBRIDGE, 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
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl 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	112		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/19/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG1107843-5					
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: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/19/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG1107843-5					
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	--
Xylene (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	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	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: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 04/19/18 06:17
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-02 Batch: WG1107843-5					
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	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl 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	113		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	103		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG1107843-3 WG1107843-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	110		110		70-130	0		20
Carbon tetrachloride	120		120		70-130	0		20
1,2-Dichloropropane	110		100		70-130	10		20
Dibromochloromethane	100		100		70-130	0		20
1,1,2-Trichloroethane	99		98		70-130	1		20
Tetrachloroethene	98		96		70-130	2		20
Chlorobenzene	100		99		70-130	1		20
Trichlorofluoromethane	120		120		70-130	0		20
1,2-Dichloroethane	120		120		70-130	0		20
1,1,1-Trichloroethane	120		120		70-130	0		20
Bromodichloromethane	110		110		70-130	0		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	110		110		70-130	0		20
Bromoform	90		91		70-130	1		20
1,1,2,2-Tetrachloroethane	91		91		70-130	0		20
Benzene	100		100		70-130	0		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
Chloromethane	120		120		70-130	0		20
Bromomethane	78		86		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG1107843-3 WG1107843-4								
Vinyl chloride	110		110		70-130	0		20
Chloroethane	120		110		70-130	9		20
1,1-Dichloroethene	91		89		70-130	2		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	110		100		70-130	10		20
1,2-Dichlorobenzene	94		97		70-130	3		20
1,3-Dichlorobenzene	97		98		70-130	1		20
1,4-Dichlorobenzene	96		98		70-130	2		20
Methyl tert butyl ether	100		100		70-130	0		20
p/m-Xylene	105		100		70-130	5		20
o-Xylene	100		100		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	110		100		70-130	10		20
1,2,3-Trichloropropane	96		98		70-130	2		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	110		120		70-130	9		20
Acetone	120		130		70-130	8		20
Carbon disulfide	80		95		70-130	17		20
2-Butanone	120		120		70-130	0		20
4-Methyl-2-pentanone	90		90		70-130	0		20
2-Hexanone	110		100		70-130	10		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG1107843-3 WG1107843-4								
2,2-Dichloropropane	120		120		70-130	0		20
1,2-Dibromoethane	97		94		70-130	3		20
1,3-Dichloropropane	100		99		70-130	1		20
1,1,1,2-Tetrachloroethane	100		100		70-130	0		20
Bromobenzene	95		96		70-130	1		20
n-Butylbenzene	100		100		70-130	0		20
sec-Butylbenzene	100		100		70-130	0		20
tert-Butylbenzene	110		110		70-130	0		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	85		83		70-130	2		20
Hexachlorobutadiene	84		82		70-130	2		20
Isopropylbenzene	100		100		70-130	0		20
p-Isopropyltoluene	100		100		70-130	0		20
Naphthalene	86		87		70-130	1		20
n-Propylbenzene	100		100		70-130	0		20
1,2,3-Trichlorobenzene	84		86		70-130	2		20
1,2,4-Trichlorobenzene	85		88		70-130	3		20
1,3,5-Trimethylbenzene	100		100		70-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
Ethyl ether	100		100		70-130	0		20
Isopropyl Ether	120		120		70-130	0		20
Ethyl-Tert-Butyl-Ether	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET

Project Number: 34250-844

Lab Number: L1813322

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-02 Batch: WG1107843-3 WG1107843-4								
Tertiary-Amyl Methyl Ether	99		98		70-130	1		20
1,4-Dioxane	88		76		70-130	15		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	116		111		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	98		100		70-130
Dibromofluoromethane	104		104		70-130

PETROLEUM HYDROCARBONS

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID:	L1813322-01	Date Collected:	04/17/18 11:50
Client ID:	HA-C2_2018-0417	Date Received:	04/17/18
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	04/18/18 19:26		
Analyst:	MZ		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	84		70-130
2,5-Dibromotoluene-FID	98		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID:	L1813322-01	Date Collected:	04/17/18 11:50
Client ID:	HA-C2_2018-0417	Date Received:	04/17/18
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	04/17/18 23:25
Analytical Date:	04/18/18 13:56	Cleanup Method1:	EPH-04-1
Analyst:	MEO	Cleanup Date1:	04/18/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	63		40-140
o-Terphenyl	84		40-140
2-Fluorobiphenyl	86		40-140
2-Bromonaphthalene	84		40-140

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID:	L1813322-02	Date Collected:	04/17/18 13:30
Client ID:	HA11-01A_2018-0417	Date Received:	04/17/18
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water		
Analytical Method:	100,VPH-04-1.1		
Analytical Date:	04/18/18 20:06		
Analyst:	MZ		

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	83		70-130
2,5-Dibromotoluene-FID	97		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID:	L1813322-02	Date Collected:	04/17/18 13:30
Client ID:	HA11-01A_2018-0417	Date Received:	04/17/18
Sample Location:	CAMBRIDGE, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	04/17/18 23:25
Analytical Date:	04/18/18 14:42	Cleanup Method1:	EPH-04-1
Analyst:	MEO	Cleanup Date1:	04/18/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	59		40-140
o-Terphenyl	78		40-140
2-Fluorobiphenyl	82		40-140
2-Bromonaphthalene	77		40-140

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 04/18/18 00:26
Analyst: MEO

Extraction Method: EPA 3510C
Extraction Date: 04/17/18 08:10
Cleanup Method: EPH-04-1
Cleanup Date: 04/17/18

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-02 Batch: WG1107088-1					
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	65		40-140
o-Terphenyl	67		40-140
2-Fluorobiphenyl	82		40-140
2-Bromonaphthalene	80		40-140

Project Name: 50 ROGERS STREET
Project Number: 34250-844
Lab Number: L1813322
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 100,VPH-04-1.1
Analytical Date: 04/18/18 14:05
Analyst: MZ

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-02 Batch: WG1107833-4					
C5-C8 Aliphatics	ND		ug/l	50.0	--
C9-C12 Aliphatics	ND		ug/l	50.0	--
C9-C10 Aromatics	ND		ug/l	50.0	--
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	92		70-130
2,5-Dibromotoluene-FID	108		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-02 Batch: WG1107088-2 WG1107088-3								
C9-C18 Aliphatics	75		76		40-140	1		25
C19-C36 Aliphatics	77		80		40-140	4		25
C11-C22 Aromatics	69		82		40-140	17		25
Naphthalene	62		74		40-140	18		25
2-Methylnaphthalene	64		76		40-140	17		25
Acenaphthylene	67		78		40-140	15		25
Acenaphthene	69		81		40-140	16		25
Fluorene	69		82		40-140	17		25
Phenanthrene	70		83		40-140	17		25
Anthracene	68		81		40-140	17		25
Fluoranthene	68		83		40-140	20		25
Pyrene	70		85		40-140	19		25
Benzo(a)anthracene	68		82		40-140	19		25
Chrysene	70		82		40-140	16		25
Benzo(b)fluoranthene	67		82		40-140	20		25
Benzo(k)fluoranthene	67		79		40-140	16		25
Benzo(a)pyrene	65		78		40-140	18		25
Indeno(1,2,3-cd)Pyrene	60		73		40-140	20		25
Dibenzo(a,h)anthracene	65		78		40-140	18		25
Benzo(ghi)perylene	61		73		40-140	18		25
Nonane (C9)	60		62		30-140	3		25
Decane (C10)	66		69		40-140	4		25
Dodecane (C12)	69		72		40-140	4		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-02 Batch: WG1107088-2 WG1107088-3								
Tetradecane (C14)	73		74		40-140	1		25
Hexadecane (C16)	75		77		40-140	3		25
Octadecane (C18)	75		79		40-140	5		25
Nonadecane (C19)	75		78		40-140	4		25
Eicosane (C20)	75		79		40-140	5		25
Docosane (C22)	75		78		40-140	4		25
Tetracosane (C24)	74		78		40-140	5		25
Hexacosane (C26)	74		78		40-140	5		25
Octacosane (C28)	73		77		40-140	5		25
Triacontane (C30)	74		77		40-140	4		25
Hexatriacontane (C36)	76		79		40-140	4		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	67		71		40-140
o-Terphenyl	69		82		40-140
2-Fluorobiphenyl	78		88		40-140
2-Bromonaphthalene	76		86		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-02 Batch: WG1107833-2 WG1107833-3								
C5-C8 Aliphatics	112		113		70-130	1		25
C9-C12 Aliphatics	119		113		70-130	5		25
C9-C10 Aromatics	103		95		70-130	9		25
Benzene	90		90		70-130	1		25
Toluene	94		91		70-130	3		25
Ethylbenzene	104		97		70-130	7		25
p/m-Xylene	102		94		70-130	8		25
o-Xylene	101		93		70-130	8		25
Methyl tert butyl ether	90		90		70-130	0		25
Naphthalene	102		95		70-130	7		25
1,2,4-Trimethylbenzene	103		95		70-130	9		25
Pentane	123		125		70-130	2		25
2-Methylpentane	108		110		70-130	2		25
2,2,4-Trimethylpentane	109		111		70-130	2		25
n-Nonane	114		113		30-130	1		25
n-Decane	122		115		70-130	6		25
n-Butylcyclohexane	122		114		70-130	7		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	101		94		70-130
2,5-Dibromotoluene-FID	116		108		70-130

Project Name: 50 ROGERS STREET
Project Number: 34250-844

Lab Number: L1813322
Report Date: 04/23/18

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(*)
L1813322-01A	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-01B	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-01C	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-01D	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-01E	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-01F	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-01G	Amber 1000ml HCl preserved	A	<2	<2	2.5	Y	Absent		EPH-10(14)
L1813322-01H	Amber 1000ml HCl preserved	A	<2	<2	2.5	Y	Absent		EPH-10(14)
L1813322-02A	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-02B	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-02C	Vial HCl preserved	A	NA		2.5	Y	Absent		MCP-8260-10(14)
L1813322-02D	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-02E	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-02F	Vial HCl preserved	A	NA		2.5	Y	Absent		VPH-10(14)
L1813322-02G	Amber 1000ml HCl preserved	A	7	4	2.5	N	Absent		EPH-10(14)
L1813322-02H	Amber 1000ml HCl preserved	A	<2	<2	2.5	Y	Absent		EPH-10(14)

*Values in parentheses indicate holding time in days

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813322
Project Number:	34250-844	**Report Date:**	04/23/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

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

Terms

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

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

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

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

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

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813322
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Data Qualifiers

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

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

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

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

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

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

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

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

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

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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

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

Report Format: Data Usability Report

Project Name:	50 ROGERS STREET	**Lab Number:**	L1813322
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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.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

100 Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of VPH under the Massachusetts Contingency Plan, WSC-CAM-IVA, 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: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

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

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

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

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

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

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: 4/17/18

ALPHA Job #: L813322

H&A Information
- H&A Client: ARE-MA Region No. 62 LLC
- H&A Address: 465 Medford St, Suite 2200
- Boston, MA 02129
- H&A Phone: 617-886-7359
- H&A Fax: gdaylor@haleyaldrich.com
- H&A Email: lpenwell@haleyaldrich.com

Project Information
- Project Name: 50 Rogers Street
- Project Location: Cambridge, MA
- Project #: 34250-844
- (Use Project name as Project #) ☐
- Project Manager: Rebecca Higgins/Lee Penwell
- 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 NPDES RGP
- MCP Method 1

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's Initials	1. VOCs	3. EPH c-ranges	4. VPH c-ranges	Sample Specific Comments
13322-01	HA-C2_2018-0417	4/17/18	11:50	AQ	LCP	X	X	X	
02	HA-11-01A-2018-0417	4/17/18	13:30	AQ	LCP	X	X	X	

Container Type: V V V
Preservative: B B 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
	4-17-18/1541		
	4/17/18 1631		4/17/18 1631
AAL	4/17/18 1750		4/17/18 17:50

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 services under this Chain of Custody are performed in accordance with terms and conditions within Blanket Service Agreement 2015-18-Alpha Analytical by and between Haley & Aldrich, Inc., its subsidiaries and Alpha Analytical.

Document ID: 20455 Rev 1 (1/28/2016)

Method Blank Summary
Form 4
VOLATILES

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L1813322
Project Name	: 50 ROGERS STREET	**Project Number**	: 34250-844
Lab Sample ID	: WG1107843-5	**Lab File ID**	: V16180419A06
Instrument ID	: VOA116		
Matrix	: WATER	**Analysis Date**	: 04/19/18 06:17

Client Sample No.	Lab Sample ID	Analysis Date
WG1107843-3LCS	WG1107843-3	04/19/18 05:02
WG1107843-4LCSD	WG1107843-4	04/19/18 05:27
HA11-01A_2018-0417	L1813322-02	04/19/18 10:27
HA-C2_2018-0417	L1813322-01	04/19/18 10:52

Continuing Calibration
Form 7

Client	: Haley & Aldrich, Inc.	**Lab Number**	: L1813322		
Project Name	: 50 ROGERS STREET	**Project Number**	: 34250-844		
Instrument ID	: VOA116	**Calibration Date**	: 04/19/18 05:02		
Lab File ID	: V16180419A03	**Init. Calib. Date(s)**	: 04/13/18	04/13/18	
Sample No	: WG1107843-2	**Init. Calib. Times**	: 06:15	09:14	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	73	-.02
Dichlorodifluoromethane	0.292	0.331	-	-13.4	20	83	0
Chloromethane	0.415	0.496	-	-19.5	20	89	0
Vinyl chloride	0.311	0.344	-	-10.6	20	82	0
Bromomethane	10	7.855	-	21.4*	20	72	0
Chloroethane	0.142	0.165	-	-16.2	20	84	0
Trichlorofluoromethane	0.357	0.426	-	-19.3	20	88	0
Ethyl ether	0.081	0.085	-	-4.9	20	77	0
1,1-Dichloroethene	0.218	0.199	-	8.7	20	74	0
Carbon disulfide	0.669	0.532	-	20.5*	20	61	0
Methylene chloride	0.258	0.261	-	-1.2	20	78	0
Acetone	10	12.434	-	-24.3*	20	87	-.01
trans-1,2-Dichloroethene	0.265	0.277	-	-4.5	20	78	0
Methyl tert-butyl ether	0.521	0.534	-	-2.5	20	79	-.01
Diisopropyl ether	1.083	1.297	-	-19.8	20	89	-.01
1,1-Dichloroethane	0.521	0.596	-	-14.4	20	84	-.01
Ethyl tert-butyl ether	0.824	0.902	-	-9.5	20	83	-.02
cis-1,2-Dichloroethene	0.287	0.3	-	-4.5	20	77	-.01
2,2-Dichloropropane	0.391	0.471	-	-20.5*	20	87	-.01
Bromochloromethane	0.123	0.136	-	-10.6	20	81	-.02
Chloroform	0.459	0.518	-	-12.9	20	84	-.02
Carbon tetrachloride	0.37	0.447	-	-20.8*	20	87	-.01
Tetrahydrofuran	10	11.202	-	-12	20	83	-.02
Dibromofluoromethane	0.248	0.257	-	-3.6	20	77	-.01
1,1,1-Trichloroethane	0.422	0.495	-	-17.3	20	87	-.02
2-Butanone	0.092	0.109	-	-18.5	20	83	-.02
1,1-Dichloropropene	0.382	0.414	-	-8.4	20	81	-.01
Benzene	1.122	1.154	-	-2.9	20	79	-.01
tert-Amyl methyl ether	0.643	0.638	-	0.8	20	78	-.02
1,2-Dichloroethane-d4	0.25	0.289	-	-15.6	20	87	-.02
1,2-Dichloroethane	0.324	0.384	-	-18.5	20	91	-.02
Trichloroethene	0.287	0.308	-	-7.3	20	82	-.02
Dibromomethane	0.134	0.149	-	-11.2	20	82	-.02
1,2-Dichloropropane	0.298	0.322	-	-8.1	20	80	-.02
Bromodichloromethane	0.36	0.414	-	-15	20	83	-.02
1,4-Dioxane	0.0015	0.00131*	-	12.7	20	70	-.02
cis-1,3-Dichloropropene	0.441	0.465	-	-5.4	20	82	-.03
Chlorobenzene-d5	1	1	-	0	20	78	-.02
Toluene-d8	1.222	1.221	-	0.1	20	77	-.02
Toluene	0.86	0.876	-	-1.9	20	80	-.02
4-Methyl-2-pentanone	0.088	0.079*	-	10.2	20	73	-.02
Tetrachloroethene	0.35	0.345	-	1.4	20	79	-.02
trans-1,3-Dichloropropene	0.466	0.464	-	0.4	20	80	-.02
1,1,2-Trichloroethane	0.206	0.204	-	1	20	76	-.02
Chlorodibromomethane	0.303	0.305	-	-0.7	20	81	-.02

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: Haley & Aldrich, Inc.		**Lab Number**	: L1813322	
Project Name	: 50 ROGERS STREET		**Project Number**	: 34250-844	
Instrument ID	: VOA116		**Calibration Date**	: 04/19/18 05:02	
Lab File ID	: V16180419A03		**Init. Calib. Date(s)**	: 04/13/18	04/13/18
Sample No	: WG1107843-2		**Init. Calib. Times**	: 06:15	09:14
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.423	0.422	-	0.2	20	79	-.02
1,2-Dibromoethane	0.244	0.237	-	2.9	20	78	-.03
2-Hexanone	0.165	0.179	-	-8.5	20	81	-.02
Chlorobenzene	0.95	0.955	-	-0.5	20	79	-.02
Ethylbenzene	1.652	1.72	-	-4.1	20	81	-.02
1,1,1,2-Tetrachloroethane	0.326	0.345	-	-5.8	20	84	-.02
p/m Xylene	0.647	0.667	-	-3.1	20	82	-.02
o Xylene	0.606	0.614	-	-1.3	20	79	-.02
Styrene	1.002	1.009	-	-0.7	20	77	-.02
1,4-Dichlorobenzene-d4	1	1	-	0	20	80	-.02
Bromoform	0.33	0.297	-	10	20	73	-.02
Isopropylbenzene	3.448	3.495	-	-1.4	20	82	-.02
4-Bromofluorobenzene	0.965	0.943	-	2.3	20	76	-.02
Bromobenzene	0.726	0.689	-	5.1	20	75	-.01
n-Propylbenzene	4.009	4.174	-	-4.1	20	84	-.02
1,1,2,2-Tetrachloroethane	0.559	0.509	-	8.9	20	70	-.02
2-Chlorotoluene	2.588	2.631	-	-1.7	20	81	-.02
1,3,5-Trimethylbenzene	2.777	2.831	-	-1.9	20	82	-.02
1,2,3-Trichloropropane	0.436	0.421	-	3.4	20	75	-.02
4-Chlorotoluene	2.34	2.374	-	-1.5	20	80	-.01
tert-Butylbenzene	1.825	1.946	-	-6.6	20	86	-.01
1,2,4-Trimethylbenzene	2.738	2.772	-	-1.2	20	80	-.01
sec-Butylbenzene	3.384	3.467	-	-2.5	20	82	-.02
p-Isopropyltoluene	2.983	3.031	-	-1.6	20	83	-.01
1,3-Dichlorobenzene	1.452	1.405	-	3.2	20	77	-.01
1,4-Dichlorobenzene	1.44	1.379	-	4.2	20	76	-.01
n-Butylbenzene	2.622	2.672	-	-1.9	20	84	0
1,2-Dichlorobenzene	1.283	1.201	-	6.4	20	74	-.01
1,2-Dibromo-3-chloropropan	0.08	0.068	-	15	20	72	-.01
Hexachlorobutadiene	10	8.37	-	16.3	20	80	0
1,2,4-Trichlorobenzene	0.74	0.633	-	14.5	20	70	0
Naphthalene	1.779	1.524	-	14.3	20	70	0
1,2,3-Trichlorobenzene	0.642	0.538	-	16.2	20	69	0

* Value outside of QC limits.