SANBORN HEAD

Building Trust. Engineering Success.

U.S. Environmental Protection Agency
Office of Ecosystem Protection
EPA/OEP RGP Applications Coordinator
5 Post Office Square, Suite 100 (OEP06-01)
Boston, MA 02109-3912

December 20, 2021

Re: Notice of Intent for the Remediation General Permit
Temporary Construction Dewatering for Site Redevelopment
Massachusetts Institute of Technology, Building 55
Cambridge, Massachusetts, 02139

Dear Sir/Madam:

On behalf of Massachusetts Institute of Technology (MIT) (Client), this letter submits a Notice of Intent (NOI) to the U.S. Environmental Protection Agency (U.S. EPA) for coverage under the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) MAG910000 for Building 55 located on Massachusetts Institute of Technology (MIT)'s campus at 77 Massachusetts Avenue in Cambridge, Massachusetts (the Site). This letter and supporting documentation were prepared in accordance with the U.S. EPA guidance for construction dewatering under the RGP program. Barr & Barr is the general contractor for the project and will have responsibility of the subcontractors performing the dewatering activities at the Site. Subcontractors working for Barr & Barr on the project will be required to meet the requirements of this NOI and the RGP. The location of the Site and the discharge location into the Charles River via a storm drain outfall are shown on Figure 1.

SITE CONDITIONS AND HISTORICAL SITE USES

The Site is located on MIT's main campus in Cambridge, Massachusetts. The Site refers to the vicinity around the existing Building 54 and the proposed Building 55 as shown on Figure 2. The Site is adjacent to several other MIT-owned buildings including Buildings 56 and 66 to the north, Building 62 to the east, Building 14 (Hayden Library) to the south, and Building 18 to the west.

Historical maps indicate the area of land now occupied by the MIT campus was previously marshland in the Charles River Basin. Plans to fill and develop this portion of the marshland began as early as 1840. By 1899, filling of the entire future MIT campus area had been completed. MIT purchased the land in 1912 and began construction of the Main Campus buildings in 1913. Construction of the Main Campus buildings has been ongoing since 1913. Building 54 was completed in 1964. No Massachusetts Contingency Plan (MCP) Release Tracking Number (RTNs) are associated with the Site.

PROPOSED DEVELOPMENT

The project includes a two-story addition to the north of the existing Building 54 structure, identified as Building 55. The footprint of the proposed Building 55 is approximately 3,500 square feet (SF), and the finished floor elevation is intended to match the existing ground

floor of Building 54 at approximately El. 23 feet and no basement space is proposed. Additionally as part of the redevelopment, landscape and subsurface utility improvements are proposed in the vicinity of Building 54 and Building 55, including an approximately 3,500 SF rain garden to the north of Building 55. The Site and proposed redevelopment plans are depicted on Figure 2.

The earthwork for proposed building foundations will require excavations of soil of up to 13 feet below ground surface (bgs). Groundwater is anticipated to be encountered at approximately 9.5 to 10 feet bgs. Groundwater that flows into the excavations during construction activities that requires dewatering and cannot be discharged back into the ground will be treated prior to discharge to an existing storm drain such that the discharged effluent meets the effluent limitations established by NPDES Part 2.1 and Appendix V of the RGP Application. Figure 2 shows the extent of the proposed Building 55, where dewatering activities are anticipated. Figure 3 includes a schematic of the proposed dewatering treatment system. The completed NOI for the Remediation General Permit form is included as Appendix A.

WATER QUALITY DATA

On August 12, 2021, Sanborn Head & Associates (Sanborn Head), the project's environmental consultant, collected samples to characterize the receiving and source waters in support of this NOI. The source water sample was collected from existing groundwater monitoring well SH-2, which is representative of site groundwater conditions. The receiving water was collected from the Charles River adjacent to the proposed outfall discharge location. The groundwater sample was collected as a grab sample using a bailer, and the surface water sample was collected from a dedicated, disposable bailer. Both samples were submitted to Eastern Analytical, Inc (EAI) of Concord, NH for analysis for the 2017 NPDES suite of parameters.

The receiving surface water discharge point for the treatment system will be the Charles River. Information regarding the receiving water was collected from the Massachusetts Year 2016 Integrated List of Waters which is included in Appendix B. Dilution calculation information and correspondence with DEP is included in Appendix C. Analytical laboratory data for on-Site and surface water sampling is summarized in Table 1, and the analytical data report is included in Appendix D.

TREATMENT SYSTEM INFORMATION

Dewatering will be conducted from sumps or well points located inside or adjacent to the excavation. Dewatering is currently anticipated to begin in January 2022 and is anticipated to be required for less than 12 months. On average, we estimate effluent discharge rates of about 10 gallons per minute (gpm), with occasional peak flows of approximately 100 gpm during significant precipitation events. Prior to discharge, collected water will be routed through a sedimentation tank and bag filter, at a minimum, to remove suspended solids as shown in the Proposed Treatment System Schematic included in Figure 3.

One chemical aided settling system for the application of Lockwood Remediation Technologies (LRT) E-50 coagulant and LRT nonionic dry polymer (flocculant) may be used to control total suspended solids (TSS) in the effluent if necessary to meet the permit

requirements. The chemical aided settling system will be installed at the influent tank at the head of the water treatment system. The system will include two chemical feed pumps, mixers, injection tubing and a flocculant "make-down" system used to prepare batches of dry polymer. The appropriate chemical dosing necessary for efficient TSS settling will be determined in the field via a jar test. Dosing can vary throughout the project with changes in influent water characteristics such as flowrate, pH, TSS concentrations.

The dosing concentration for both the coagulant and dry polymer typically ranges from 25-50 parts per million (ppm). The actual dosing concentration is based on visual observations in the field and will be adjusted and calibrated by the operator during startup of the additional components to achieve the appropriate set-point for the system. Dosing is continuous at the set concentration while the system is running. It is important to note that although the dosing concentration is 25-50 ppm, the detected concentration in the carryover (post bag filter) is in the parts per trillion (ppt) range (about 6 orders of magnitude less than the dosing concentration). This is because nearly all the applied chemical becomes incorporated in the sludge and removed from the waste stream as a solid from the weir tank and as part of typical system operations and maintenance. The waste generated will be incorporated with the sludge and removed as a solid.

A pH adjustment system that is capable of raising pH may also be implemented if required to meet the permit requirements. The pH system is designed to raise the pH with sodium hydroxide and includes an automatic metered acid feed system with a mix tank, acid feed pumps and setpoint controls that maintain the pH approved by the permit, usually set between 6.5 and 8.3. The pH is continuously monitored and the sodium hydroxide will only be added if the setpoints are exceeded. The sodium hydroxide will be stored in 55-gallon drums with secondary containment systems in place (overpack drum). Please note that the realistic average use of sodium hydroxide/day will be 0.5 gallons or less. The maximum application concentration for sodium hydroxide would be 333 mg/L.

The safety data sheets (SDS)s for the chemicals used in the chemical aided settling system and the pH adjustment System are included in Appendix E.

Construction dewatering under this RGP will include piping and discharging to storm drains located within and near the Site. The storm drains travel a short distance south and discharge directly into the Charles River. The proposed outfall location on the Charles River is a City of Cambridge Outfall #D06OF000.

A Best Management Practices Plan (BMPP), which outlines the proposed discharge operations covered under the RGP, will be available at the Site and is not being submitted with this NOI.

DETERMINATION OF ENDANGERED SPECIES ACT ELIGIBILITY

According to the Information for Planning and Conservation (IPaC), available through the U.S. Fish and Wildlife Service (FWS) website, the excavation activities will not impact Areas of Critical Environmental Concern (ACEC) or Habitats of Rare Wetland Wildlife. A letter from the FWS is included in Appendix F. An email requesting information regarding federally listed species in the project discharge area of the Charles River was sent to the National Oceanic and Atmospheric Administration (NOAA), and their response, included in Appendix

F, states that no listed species are known to occur in the Charles River in the area of discharge.

DETERMINATION OF NATION HISTORIC PRESERVATION ACT ELIGIBILITY

A review of the National Register of Historic Places within Cambridge, MA was performed. Based on the review, the discharge and discharge-related activities do not have the potential to cause effects on historic properties. A list of the properties reviewed is included in Appendix G.

Thank you for your consideration of this NOI/Permit. Please feel free to contact us if you wish to discuss the information contained in this application, or if any additional information is needed.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.

Patricia M. Pinto, P.E., LSP
Senior Vice President/Principal

Quincy Pratt, P.E.
Senior Project Manager

Encl. Table 1 – Summary of Water Quality Data
Figure 1 – Locus Plan
Figure 2 – Exploration Location Plan
Figure 3 – Proposed Groundwater Treatment Schematic
Appendix A – Notice of Intent Form
Appendix B – Selected Massachusetts Category 5 Waters
Appendix C – Charles River Dilution Calculations
Appendix D – Analytical Data Report
Appendix E – Safety Data Sheets
Appendix F – Federal Correspondence
Appendix G – National Register of Historic Places – Cambridge, MA

cc: Cathy Vakalopoulos ~ Massachusetts Department of Environmental Protection
Louis DiBerardinis, Lachlan Patterson, Phyllis Carter ~ MIT
Matthew Jacobs ~ Barr & Barr

TABLE

Table 1
Summary of Groundwater Quality Data
MIT Building 55
Cambridge, MA

LOCATION	MCP RCGW-2	NPDES Effluent Limit	Units	OUTFALL	SH-2
SAMPLE DATE				8/12/2021	8/12/2021
SAMPLE_TYPE_CODE				N	N
LAB_SAMPLE_ID				230518.02	230518.01
SAMPLE TYPE				SW	GW
General Chemistry					
Hardness	NS	NS	mg/L	**72**	**290**
Total Suspended Solids	NS	30	mg/L	**5**	**2,300**
Chloride	NS	Monitor Only	µg/L	**150,000**	**670,000**
Chlorine, Total Residual	NS	0.2	mg/l	-	<0.50
Cyanide, Total	0.03	178	mg/L	-	**0.13**
pH	NS	NS	SU	**7.36**	**7.36**
Ammonia	10	Monitor Only	mg/L	**0.097**	**0.22**
Chromium III	600	323	µg/L	<10	**180**
Chromium VI, Dissolved	300	NS	µg/L	<10	<10
Chromium VI, Total	300	323	µg/L	<10	<10
Microextractables					
Dibromo-3-chloropropane (1,2-) (DBCP)	1,000	NS	µg/L	-	<0.02
Dibromoethane (1,2-) (Ethylene Dibromide)	2	0.05	µg/L	-	<0.02
Metals					
Antimony, Total	8,000	206	µg/L	<0.5	**3.0**
Arsenic, Total	900	104	µg/L	**1.1**	**45**
Cadmium, Total	4	10.2	µg/L	<0.1	**1.6**
Chromium, Total	300	323	µg/L	**0.82**	**180**
Copper, Total	100,000	242	µg/L	**3.2**	**370**
Iron, Total	NS	5,000	µg/L	**880**	**110,000**
Lead, Total	10	2.18	µg/L	**2.9**	**630**
Mercury, Total	20	0.739	µg/L	<0.2	<0.2
Nickel, Total	200	1,450	µg/L	**1.3**	**100**
Selenium, Total	100	235.8	µg/L	<0.5	**2.5**
Silver, Total	7	35.1	µg/L	<0.1	**1.2**
Zinc, Total	900	420	µg/L	**8.3**	**490**
Total Petroleum Hydrocarbon					
TPH	5	5	mg/L	-	**7.1**
Volatile Organic Compounds					
Acetone	50,000	7,970	µg/L	-	<10
Acrolein	1,000	NS	µg/L	-	<50
Acrylonitrile	10,000	NS	µg/L	-	<50
Benzene	1,000	5.0 See "Total BTEX"	µg/L	-	<1
Bromodichloromethane	6	NS	µg/L	-	<0.5
Bromoform	700	NS	µg/L	-	<2
Bromomethane	7	NS	µg/L	-	<2
Butanone (2-) (MEK)	50,000	NS	µg/L	-	<10
Carbon tetrachloride	2	4.4	µg/L	-	<1
Chlorobenzene (Monochlorobenzene)	200	NS	µg/L	-	<1
Chloroethane	10,000	NS	µg/L	-	<2
Chloroethylvinyl ether (2-)	50,000	NS	µg/L	-	<2
Chloroform (Trichloromethane)	50	NS	µg/L	-	<1
Chloromethane	10,000	NS	µg/L	-	<2
Dibromochloromethane	20	NS	µg/L	-	<1
Dichlorobenzene (1,2-)	2,000	600	µg/L	-	<1
Dichlorobenzene (1,3-)	6,000	320	µg/L	-	<1
Dichlorobenzene (1,4-)	60	5	µg/L	-	<1
Dichloroethane (1,1-)	2,000	70	µg/L	-	<1
Dichloroethane (1,2-)	5	5	µg/L	-	<1
Dichloroethene (1,1-)	80	3.2	µg/L	-	<0.5
Dichloroethene (cis-1,2-)	20	70	µg/L	-	<1
Dichloroethene (trans-1,2-)	80	NS	µg/L	-	<1
Dichloropropane (1,2-)	3	NS	µg/L	-	<1
Dichloropropene (cis-1,3-)	5	NS	µg/L	-	<0.5
Dichloropropene (trans-1,3-)	5	NS	µg/L	-	<0.5
Dioxane (1,4-)	6,000	200	µg/L	-	<10
Ethanol	10,000	Monitor Only	µg/L	-	<400
Ethylbenzene	5,000	See "Total BTEX"	µg/L	-	<1
Hexanone (2-)	10,000	NS	µg/L	-	<10
Methyl-2-pentanone (4-) (MIBK)	50,000	NS	µg/L	-	<10
Methylene Chloride (Dichloromethane)	2,000	4.6	µg/L	-	<1
Methyl-tert Butyl Ether (MTBE)	5,000	70	µg/L	-	<1
Styrene	100	NS	µg/L	-	<1
Tert Amyl Methyl Ether (TAME)	NS	90	µg/L	-	<2
Tert Butyl Alcohol (TBA) (tert-Butanol)	10,000	120	µg/L	-	<30
Tetrachloroethane (1,1,2,2-)	9	NS	µg/L	-	<1
Tetrachloroethene (PCE)	50	5	µg/L	-	<1
Toluene	40,000	See "Total BTEX"	µg/L	-	<1
Trichloroethane (1,1,1-)	4,000	200	µg/L	-	<1
Trichloroethane (1,1,2-)	900	5.0	µg/L	-	<1
Trichloroethene (TCE)	5	5.0	µg/L	-	<1
Trichlorofluoromethane (CFC11)	100,000	NS	µg/L	-	<2
Vinyl acetate	100,000	NS	µg/L	-	<10
Vinyl chloride	2	2.0	µg/L	-	<1
Xylene (m,p-)	NS	See "Total BTEX"	µg/L	-	<1
Xylene (o-)	3,000	See "Total BTEX"	µg/L	-	<1
Total BTEX	NS	100	µg/L	-	ND

Table 1
Summary of Groundwater Quality Data
MIT Building 55
Cambridge, MA

LOCATION	MCP RCGW-2	NPDES Effluent Limit	Units	OUTFALL	SH-2
SAMPLE DATE				8/12/2021	8/12/2021
SAMPLE_TYPE_CODE				N	N
LAB_SAMPLE_ID				230518.02	230518.01
SAMPLE TYPE				SW	GW
Semi-Volatile Organic Compounds					
Acenaphthene	10,000	See "Total Group 2 PAHs"	µg/L	-	<1
Acenaphthylene	40	See "Total Group 2 PAHs"	µg/L	-	<1
Acetophenone	100,000	NS	µg/L	-	<10
Aniline	100,000	NS	µg/L	-	<1
Anthracene	30	See "Total Group 2 PAHs"	µg/L	-	**1.9**
Azobenzene	NS	NS	µg/L	-	<1
Benzidine	1,000	NS	µg/L	-	<5
Benzo(a)anthracene	1,000	0.5067	µg/L	-	**4.8**
Benzo(a)pyrene	500	0.5067	µg/L	-	**4.5**
Benzo(b)fluoranthene	400	0.5067	µg/L	-	**5.2**
Benzo(g,h,i)perylene	20	See "Total Group 2 PAHs"	µg/L	-	**2.6**
Benzo(k)fluoranthene	100	0.5067	µg/L	-	**2.1**
Benzoic acid	100,000	NS	µg/L	-	<50
Benzyl Alcohol	NS	NS	µg/L	-	<10
bis(2-Chloroethoxy)methane	50,000	NS	µg/L	-	<1
bis(2-Chloroethyl)ether	30	NS	µg/L	-	<1
bis(2-Chloroisopropyl)ether	100	NS	µg/L	-	<1
bis(2-Ethylhexyl)phthalate (Di(ethylhexyl)phthalate)	50,000	101 See "Total Phthalates"	µg/L	-	<5
Bromophenyl-phenylether (4-)	10,000	NS	µg/L	-	<1
Butylbenzylphthalate	10,000	See "Total Phthalates"	µg/L	-	<5
Carbazole	NS	NS	µg/L	-	<1
Chloro-3-methylphenol (4-)	100,000	NS	µg/L	-	<1
Chloroaniline (4-)	300	NS	µg/L	-	<1
Chloronaphthalene (2-)	100,000	NS	µg/L	-	<1
Chlorophenol (2-)	7,000	NS	µg/L	-	<1
Chlorophenyl-phenylether (4-)	100,000	NS	µg/L	-	<1
Chrysene	70	0.5067	µg/L	-	**4.7**
Decane (n-)	NS	NS	µg/L	-	<5
Dibenz(a,h)anthracene	40	1.0	µg/L	-	<1
Dibenzofuran	10,000	NS	µg/L	-	<1
Dichloroaniline (2,3-)	NS	NS	µg/L	-	<1
Dichlorobenzene (1,2-)	2,000	600	µg/L	-	<1
Dichlorobenzene (1,3-)	6,000	320	µg/L	-	<1
Dichlorobenzene (1,4-)	60	5.0	µg/L	-	<1
Dichlorobenzidine (3,3'-)	2,000	NS	µg/L	-	<1
Dichlorophenol (2,4-)	2,000	NS	µg/L	-	<1
Diethylphthalate	9,000	See "Total Phthalates"	µg/L	-	<5
Dimethylphenol (2,4-)	40,000	NS	µg/L	-	<5
Dimethylphthalate	50,000	See "Total Phthalates"	µg/L	-	<1
Di-n-butylphthalate (Dibutylphthalate)	5,000	See "Total Phthalates"	µg/L	-	<5
Dinitro-2-methylphenol (4,6-)	5,000	NS	µg/L	-	<5
Dinitrophenol (2,4-)	20,000	NS	µg/L	-	<10
Dinitrotoluene (2,4-)	20,000	NS	µg/L	-	<2
Dinitrotoluene (2,6-)	10,000	NS	µg/L	-	<2
Di-n-octylphthalate	100,000	See "Total Phthalates"	µg/L	-	<5
Fluoranthene	200	See "Total Group 2 PAHs"	µg/L	-	**8.7**
Fluorene	40	See "Total Group 2 PAHs"	µg/L	-	<1
Hexachlorobenzene	1	NS	µg/L	-	<1
Hexachlorobutadiene	50	NS	µg/L	-	<1
Hexachlorocyclopentadiene	5,000	NS	µg/L	-	<5
Hexachloroethane	100	NS	µg/L	-	<1
Indeno(1,2,3-cd)pyrene	100	0.5067	µg/L	-	**3.2**
Isophorone	10,000	NS	µg/L	-	<1
Methylnaphthalene (1-)	NS	NS	µg/L	-	<1
Methylnaphthalene (2-)	2,000	NS	µg/L	-	<1
Methylphenol (2-)	50,000	NS	µg/L	-	<1
Methylphenol (3,4-)	NS	NS	µg/L	-	<1
Naphthalene	700	20 See "Total Group 2 PAHs"	µg/L	-	<1
Nitroaniline (2-)	NS	NS	µg/L	-	<5
Nitroaniline (3-)	NS	NS	µg/L	-	<5
Nitroaniline (4-)	100,000	NS	µg/L	-	<5
Nitrobenzene	50,000	NS	µg/L	-	<1
Nitrophenol (2-)	10,000	NS	µg/L	-	<5
Nitrophenol (4-)	10,000	NS	µg/L	-	<5
Nitrosodimethylamine (N-)	5,000	NS	µg/L	-	<1
Nitroso-di-n-propylamine (N-)	5,000	NS	µg/L	-	<0.5
Nitrosodiphenylamine (N-)	10,000	NS	µg/L	-	<1
Octadecane (n-)	NS	NS	µg/L	-	<5
Pentachlorophenol	200	1.0	µg/L	-	<5
Phenanthrene	10,000	See "Total Group 2 PAHs"	µg/L	-	**5.3**
Phenol	2,000	1,080	µg/L	-	<1
Pyrene	20	See "Total Group 2 PAHs"	µg/L	-	**8.9**
Pyridine	50,000	NS	µg/L	-	<5
Terpineol (alpha-)	NS	NS	µg/L	-	<5
Trichlorobenzene (1,2,4-)	200	NS	µg/L	-	<1
Trichlorophenol (2,4,5-)	3,000	NS	µg/L	-	<1
Trichlorophenol (2,4,6-)	500	NS	µg/L	-	<1
Total Group 1 PAHs	NS	1.0	µg/L	-	**24.5**
Total Group 2 PAHs	NS	100	µg/L	-	**27.4**
Total Phthalates	NS	190	µg/L	-	ND

Table 1
Summary of Groundwater Quality Data
MIT Building 55
Cambridge, MA

LOCATION	MCP RCGW-2	NPDES Effluent Limit	Units	OUTFALL	SH-2
SAMPLE DATE				**8/12/2021**	**8/12/2021**
SAMPLE_TYPE_CODE				**N**	**N**
LAB_SAMPLE_ID				**230518.02**	**230518.01**
SAMPLE TYPE				**SW**	**GW**
Polychlorinated Biphenyls					
Aroclor 1016	5	NS	µg/L	-	<0.2
Aroclor 1221	5	NS	µg/L	-	<0.2
Aroclor 1232	5	NS	µg/L	-	<0.2
Aroclor 1242	5	NS	µg/L	-	<0.2
Aroclor 1248	5	NS	µg/L	-	<0.2
Aroclor 1254	5	NS	µg/L	-	<0.2
Aroclor 1260	5	NS	µg/L	-	<0.2
Aroclor 1262	NS	NS	µg/L	-	<0.2
Aroclor 1268	NS	NS	µg/L	-	<0.2
Total PCBs	NS	0.000064	µg/L	-	ND

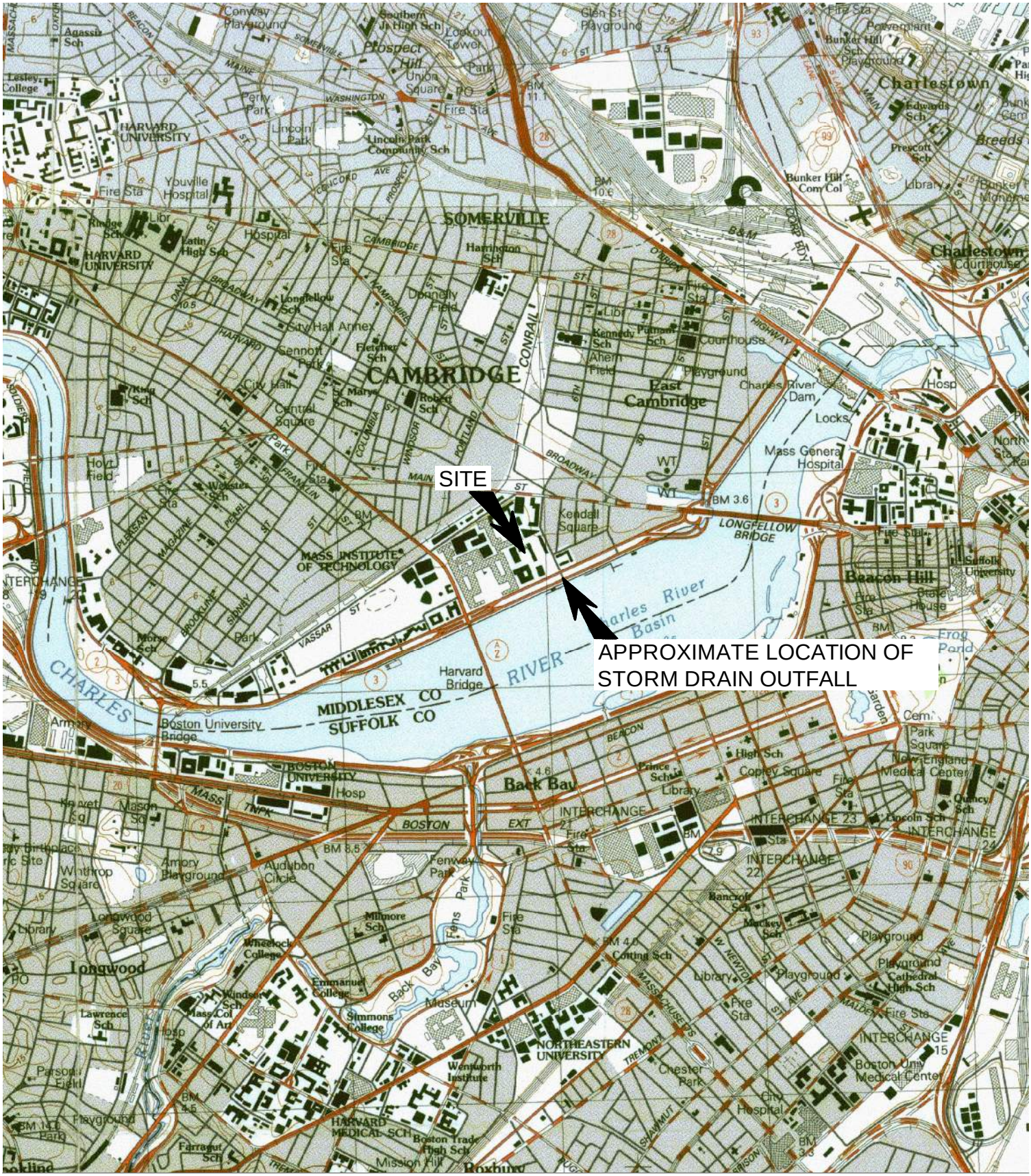
Notes:

1. Samples were collected by Sanborn, Head & Associates, Inc. (Sanborn Head) on the indicated dates and were analyzed by Eastern Analytical, Inc., of Concord, New Hampshire.

2. **Bold** values indicate detections above the laboratory reporting limits.
Totals (e.g., Total Phthalates) are the sum of the detected concentrations of the relevant analytes (NDs equal 0).

3. Abbreviations:
NPDES = National Pollutant Discharge Elimination System (NPDES) General Permit for Remediation Activity Discharges (March 9, 2017)
MCP = Massachusetts Contingency Plan
RCGW-2 = MCP Reportable Concentration for groundwater category GW-2
µg/L = micrograms per liter
mg/L = milligrams per liter
"<" indicates the analyte was not detected above the laboratory reporting limit shown
ND = Not Detected
NS = No Standard
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
PCB = Polychlorinated Biphenyl
Total Group 1 PAHs = Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, and Indeno(1,2,3-cd)pyrene
Total Group 2 PAHs = Acenaphthene, Acenaphthylene, Anthracene, Benzo(g,h,i)perylene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene

FIGURES



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NOTES:
Base map was taken from the "Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Information Technology Division"
7.5 minute USGS Quadrangle Maps: Cambridge, Massachusetts, REV: 1987

Drawn By: D.Dombrowsky
Designed By: S.LaMarre
Reviewed By: Q.Pratt
Project No: 4790.00
Date: December 2021

SCALE: 1:25,000

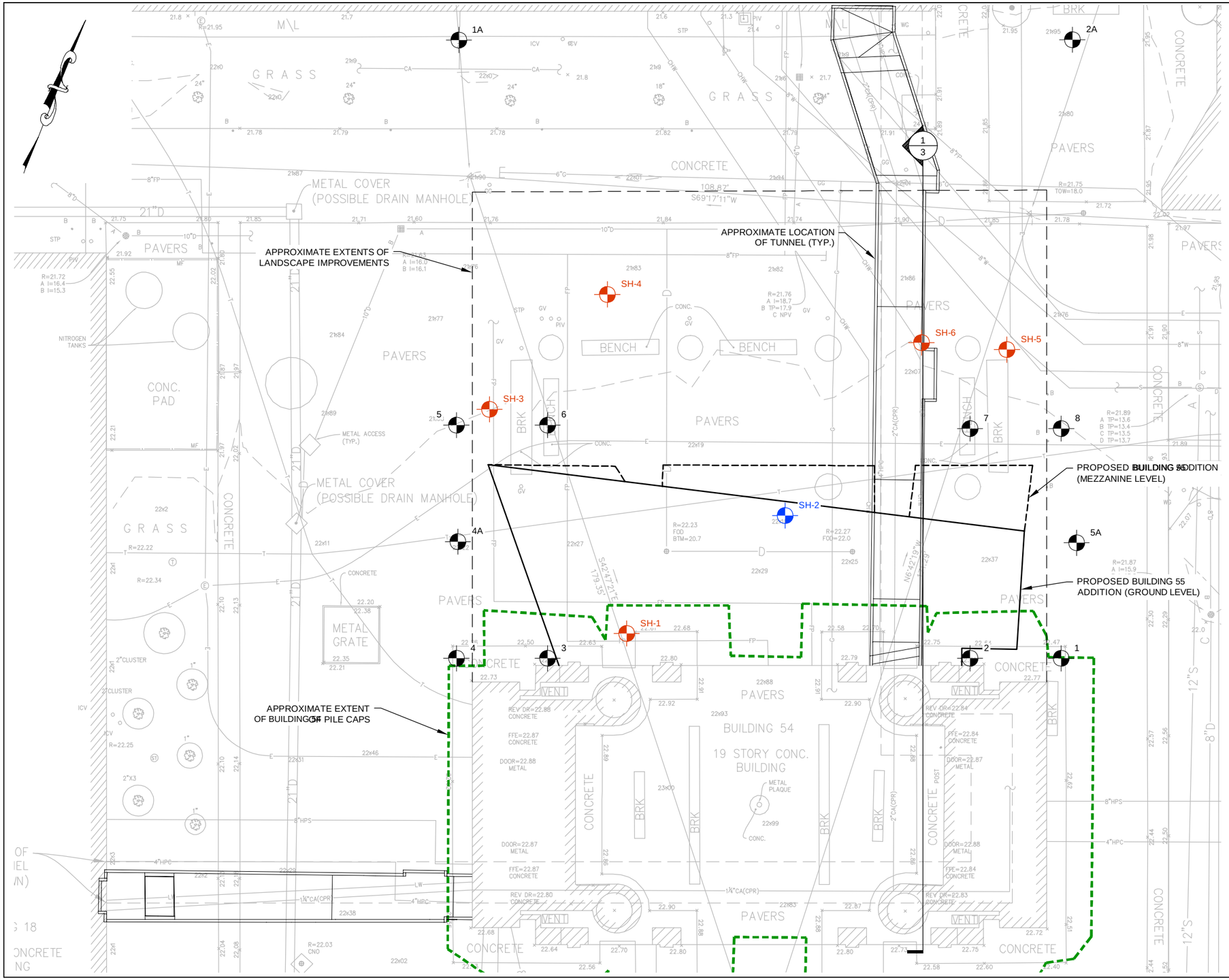
SANBORN HEAD

Figure 1

Locus Plan

NPDES
Remediation General Permit

MIT Building 54/55 Pavilion
Cambridge, Massachusetts



NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS", PREPARED BY NITSCH ENGINEERING, INC. (NITSCH) OF BOSTON, MA WITH A REVISION DATE OF APRIL 9, 2020 WITH AN ORIGINAL SCALE OF 1" = 20'.
2. THE PROPOSED TUNNEL WAS EXPORTED FROM AN AUTODESK REVIT MODEL ENTITLED, "51512 - MIT BUILDING 54 ADDITION - RVT18.RVT" ANRE GEOREFERENCED USING CONTROL POINTS PROVIDED BY NITSCH.
3. THE PROPOSED BUILDING EXTENTS WERE TRACED FROM THE "MIT BUILDING 54 LECTURE HALL RENOVATION AND ADDITION CONCEPT DESIGN PRESENTATION", PREPARED BY AW-ARCH OF CAMBRIDGE, MA.
4. THE PILE CAP EXTENTS WERE TRACED FROM A DRAWING ENTITLED, "FIELD RECORD OF PILE LOCATIONS, FINAL CAP DIMENSIONS", PREPARED BY TUNNEL CONSTRUCTION COMPANY OF BOSTON MA, DATED MAY 23, 1962 WITH AN ORIGINAL SCALE OF 1/4" = 1'-0"
5. EXPLORATIONS DESIGNATED SH-1 THROUGH SH-6 WERE ADVANCED BY SOIL EXPLORATION CORP. (SOIL X) OF LEOMINSTER, MA AND OBSERVED BY SANBORN HEAD ON JULY 16 AND 17, 2020.
6. APPROXIMATE LOCATIONS OF EXPLORATIONS ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

SH-3 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING OBSERVED BY SANBORN HEAD (JULY 2020)

SH-2 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING COMPLETED AS A MONITORING WELL OBSERVED BY SANBORN HEAD (JULY 2020)

APPROXIMATE LOCATION AND DESIGNATION OF HISTORICAL TEST BORING BY OTHERS (AUGUST 1959 & MAY 1960)

SANBORN HEAD

GRAPHICAL SCALE
10' 5' 0' 10' 20'

NO.	DATE	DESCRIPTION	BY

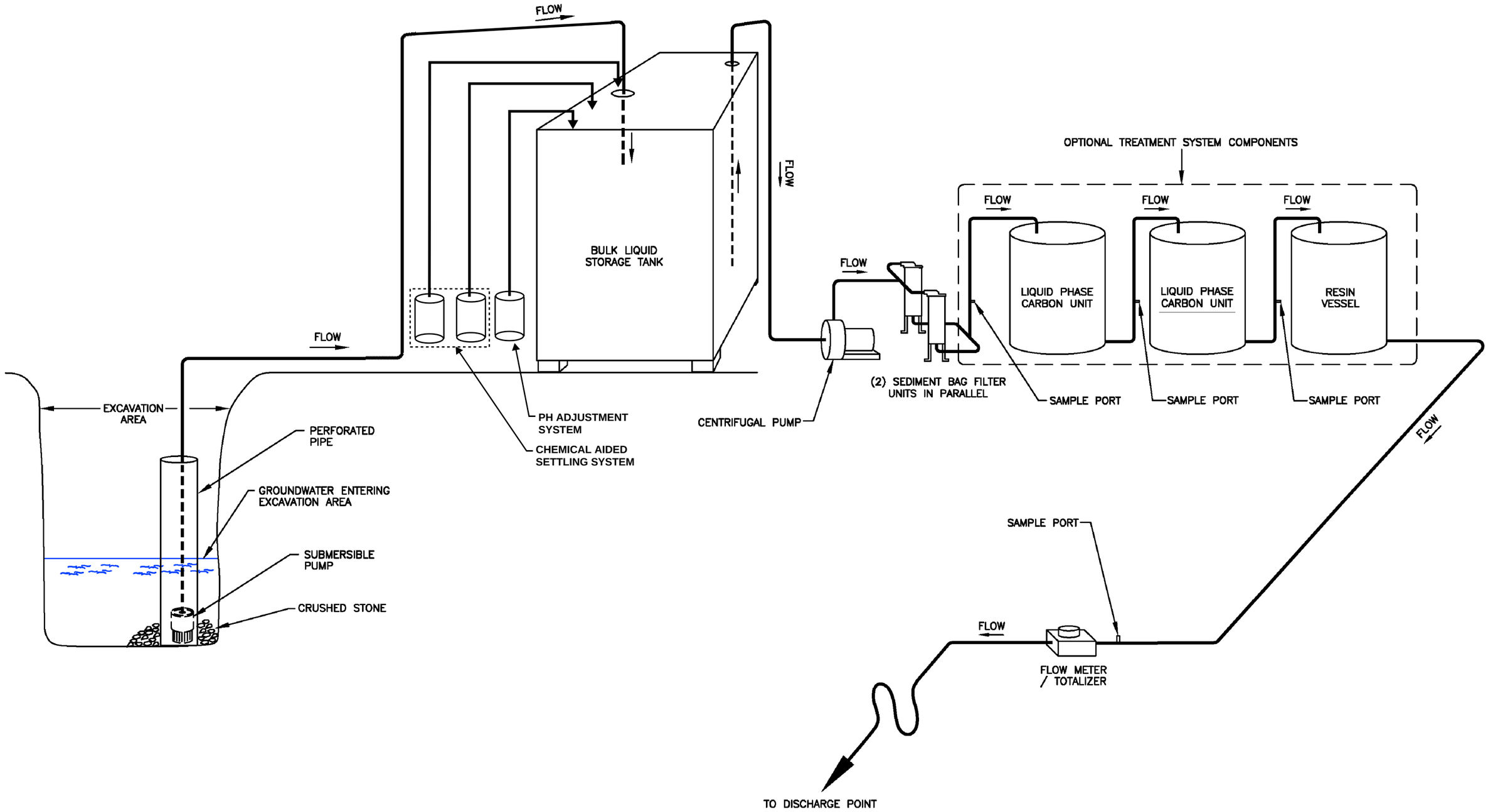
DRAWN BY: D.DOMBROWSKY
DESIGNED BY: S.LAMARRE
REVIEWED BY: P.PINTO
PROJECT MGR: Q.PRATT
PIC: P.PINTO
DATE: DECEMBER 2021

NPDES REMEDIATION GENERAL PERMIT
MIT BUILDING 54/55 PAVILLION
CAMBRIDGE, MASSACHUSETTS

PROJECT NUMBER: 4790.00

EXPLORATION LOCATION PLAN

SHEET NUMBER: 2



SANBORN HEAD

GRAPHICAL SCALE
20' 10' 0' 20' 40'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: D.DOMBROWSKY
DESIGNED BY: S.LAMARRE
REVIEWED BY: P.PINOT
PROJECT MGR: Q.PRATT
PIC: P.PINTO
DATE: DECEMBER 2021

NPDES REMEDIATION GENERAL PERMIT
MIT BUILDING 54/55 PAVILION
CAMBRIDGE, MASSACHUSETTS

CONCEPTUAL GROUNDWATER TREATMENT SCHEMATIC

PROJECT NUMBER: 4790.00

SHEET NUMBER: 3

APPENDIX A

NOTICE OF INTENT FORM

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

A. General site information:

<table>
<tr><td rowspan="4">1. Name of site:
Massachusetts Institute of Technology, Building 55</td><td colspan="3">Site address: 77 Massachusetts Ave
Street:</td></tr>
<tr><td colspan="2">City: Cambridge</td><td>State: MA</td><td>Zip: 02139</td></tr>
<tr><td colspan="3">Contact Person: Louis DiBerardinis</td></tr>
<tr><td colspan="2">Telephone: 617.253.9389</td><td>Email: loudib@mit.edu</td></tr>
<tr><td rowspan="4">2. Site owner
Massachusetts Institute of Technology

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Mailing address: 77 Massachusetts Avenue, Building N52-471
Street:</td></tr>
<tr><td colspan="2">City: Cambridge</td><td>State: MA</td><td>Zip: 02139-4307</td></tr>
<tr><td colspan="3">Contact Person: Matt Jacobs</td></tr>
<tr><td colspan="2">Telephone: 508.879.5750</td><td>Email: mjacobs@barrandbarr.com</td></tr>
<tr><td rowspan="3">3. Site operator, if different than owner
Barr & Barr</td><td colspan="3">Mailing address:
Street: 24 Superior Drive, Suite 301</td></tr>
<tr><td colspan="2">City: Natick</td><td>State: MA</td><td>Zip: 01760</td></tr>
<tr><td colspan="3">4. NPDES permit number assigned by EPA:
NA

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="2">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):
☐ 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	NA72-38	Class B (CSO)

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. See Appendix B

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.	19.2 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.	134

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: Correspondence requesting confirmation of the 7Q10 and dilution faction are included in Appendix C.

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: TSS, Chloride, Cyanide, Ammonia, Antimony, Arsenic, Cadmium, Chromium III, Copper, Iron, Lead, Mercury, Nickel, Silver, Zinc,TPH, Group 1 PAHs, Group 2 PAHs	
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): Charles River	Outfall location(s): (Latitude, Longitude) 42.358811 N, -71.086907 W

Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify:
Groundwater will be discharged to a MIT-owned catch basin west of Ames St. The catch basin connects to a City of Cambridge storm water drain line below Ames Street. The Ames St drain line is connected to an Outfall D06OF0000 located in the Charles River south of the intersection of Ames St and Memorial Drive

☐ 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: Permission confirmed from MIT. The City of Cambridge will be notified, and permission will be obtained before 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): October 2021 to September 2022

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	TM NH3	50	0.22		Report mg/L	---
Chloride		✔	1	300	5000	670000		Report µg/l	---
Total Residual Chlorine	✔		1	4500-Cl-G	50	ND		0.2 mg/L	---
Total Suspended Solids		✔	1	2540D	5000	2300000		30 mg/L	---
Antimony		✔	1	200.8	0.5	3		206 µg/L	---
Arsenic		✔	1	200.8	0.5	45		104 µg/L	---
Cadmium		✔	1	200.8	0.1	1.6		10.2 µg/L	---
Chromium III		✔	1	200.8	0.5	180		323 µg/L	---
Chromium VI	✔		1	7196A	10	ND		323 µg/L	---
Copper		✔	1	200.8	0.1	370		242 µg/L	---
Iron		✔	1	200.8	50	110000		5,000 µg/L	---
Lead		✔	1	200.8	0.1	630		160 µg/L	2.18 ug/L
Mercury	✔		1	7470/245.1	0.2	ND		0.739 µg/L	---
Nickel		✔	1	200.8	0.1	100		1,450 µg/L	---
Selenium		✔	1	200.8	0.5	2.5		235.8 µg/L	---
Silver		✔	1	200.8	0.1	1.2		35.1 µg/L	---
Zinc		✔	1	200.8	1	490		420 µg/L	---
Cyanide			1	D7511-09	50	130		178 mg/L	---
B. Non-Halogenated VOCs									
Total BTEX	✔		1	624	1	ND		100 µg/L	---
Benzene	✔		1	624	1	ND		5.0 µg/L	---
1,4 Dioxane	✔		1	624	10	ND		200 µg/L	---
Acetone	✔		1	624	10	ND		7.97 mg/L	---
Phenol	✔		1	625	1	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	✔		1	624	1	ND		4.4 µg/L	---
1,2 Dichlorobenzene	✔		1	624	1	ND		600 µg/L	---
1,3 Dichlorobenzene	✔		1	624	1	ND		320 µg/L	---
1,4 Dichlorobenzene	✔		1	624	1	ND		5.0 µg/L	---
Total dichlorobenzene	✔		1	624	1	ND		763 µg/L in NH	---
1,1 Dichloroethane	✔		1	624	1	ND		70 µg/L	---
1,2 Dichloroethane	✔		1	624	1	ND		5.0 µg/L	---
1,1 Dichloroethylene	✔		1	624	0.5	ND		3.2 µg/L	---
Ethylene Dibromide	✔		1	8011/504	0.02	ND		0.05 µg/L	---
Methylene Chloride	✔		1	624	1	ND		4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	624	1	ND		200 µg/L	---
1,1,2 Trichloroethane	✔		1	624	1	ND		5.0 µg/L	---
Trichloroethylene	✔		1	624	1	ND		5.0 µg/L	---
Tetrachloroethylene	✔		1	624	1	ND		5.0 µg/L	---
cis-1,2 Dichloroethylene	✔		1	624	1	ND		70 µg/L	---
Vinyl Chloride	✔		1	624	1	ND		2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	625	5	ND		190 µg/L	---
Diethylhexyl phthalate	✔		1	625	5	ND		101 µg/L	---
Total Group I PAHs		✔	1	625	1	24.5		1.0 µg/L	---
Benzo(a)anthracene		✔	1	625	1	4.8		As Total PAHs	0.5067 ug/L
Benzo(a)pyrene		✔	1	625	1	4.5			0.5067 ug/L
Benzo(b)fluoranthene		✔	1	625	1	5.2			0.5067 ug/L
Benzo(k)fluoranthene		✔	1	625	1	2.1			0.5067 ug/L
Chrysene		✔	1	625	1	4.7			0.5067 ug/L
Dibenzo(a,h)anthracene	✔		1	625	1	ND			0.5067 ug/L
Indeno(1,2,3-cd)pyrene		✔	1	625	1	3.2			0.5067 ug/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
Total Group II PAHs		✔	1	625	1	27.4		100 µg/L	---
Naphthalene	✔		1	625	1	ND		20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608.3	0.2	ND		0.000064 µg/L	---
Pentachlorophenol	✔		1	625	5	ND		1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✔	1	1664B	5000	7100		5.0 mg/L	---
Ethanol	✔		1	8260C	400	ND		Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	624	1	ND		70 µg/L	---
tert-Butyl Alcohol	✔		1	624	30	ND		120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	624	2	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:									
pH			1	field		7.34 SU			
Temperature			1	field		19.6 C			

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.

Groundwater encountered during construction activities will be pumped into a treatment system prior to discharge. The treatment system will consist of an on-site fractionation tank where solids will settle out. The effluent will then pass through a bag filter. The effluent will be discharged an existing storm drain system. Prior to initial discharge and throughout the discharge the treated effluent will be tested and if necessary additional treatment including liquid phase carbon units and/or resin vessels.

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: Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	100
Provide the proposed maximum effluent flow in gpm.	100
Provide the average effluent flow in gpm.	10
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:
pH conditioners and coagulants may be added to the treatment system if necessary to meet effluent limits. A description the systems are provided in the NOI cover letter, and SDS for the products are provided in Appendix E.
None anticipated

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

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

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

G. Endangered Species Act eligibility determination

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

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

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

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

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

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

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

H. National Historic Preservation Act eligibility determination

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

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

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

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

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

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

I. Supplemental information

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

Appendix A – Notice of Intent Form; Appendix B – Massachusetts Category 5 Waters "Waters requiring a TDML"; Appendix C – Water Quality Based Effluent Limitations (WQBELs) Documentation; Appendix D – Analytical Data Report; Appendix E – Environmental Receptors; Appendix F – National Register of Historic Places, Research Documentation

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 developed and implemented upon initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ■ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: Louis DiBerardinis	Date: 11/23/2021
Print Name and Title: Louis DiBerardinis	

APPENDIX B

MASSACHUSETTS CATEGORY 5 WATERS AND SITE ASSESSMENT MAP

MassDEP - Bureau of Waste Site Cleanup

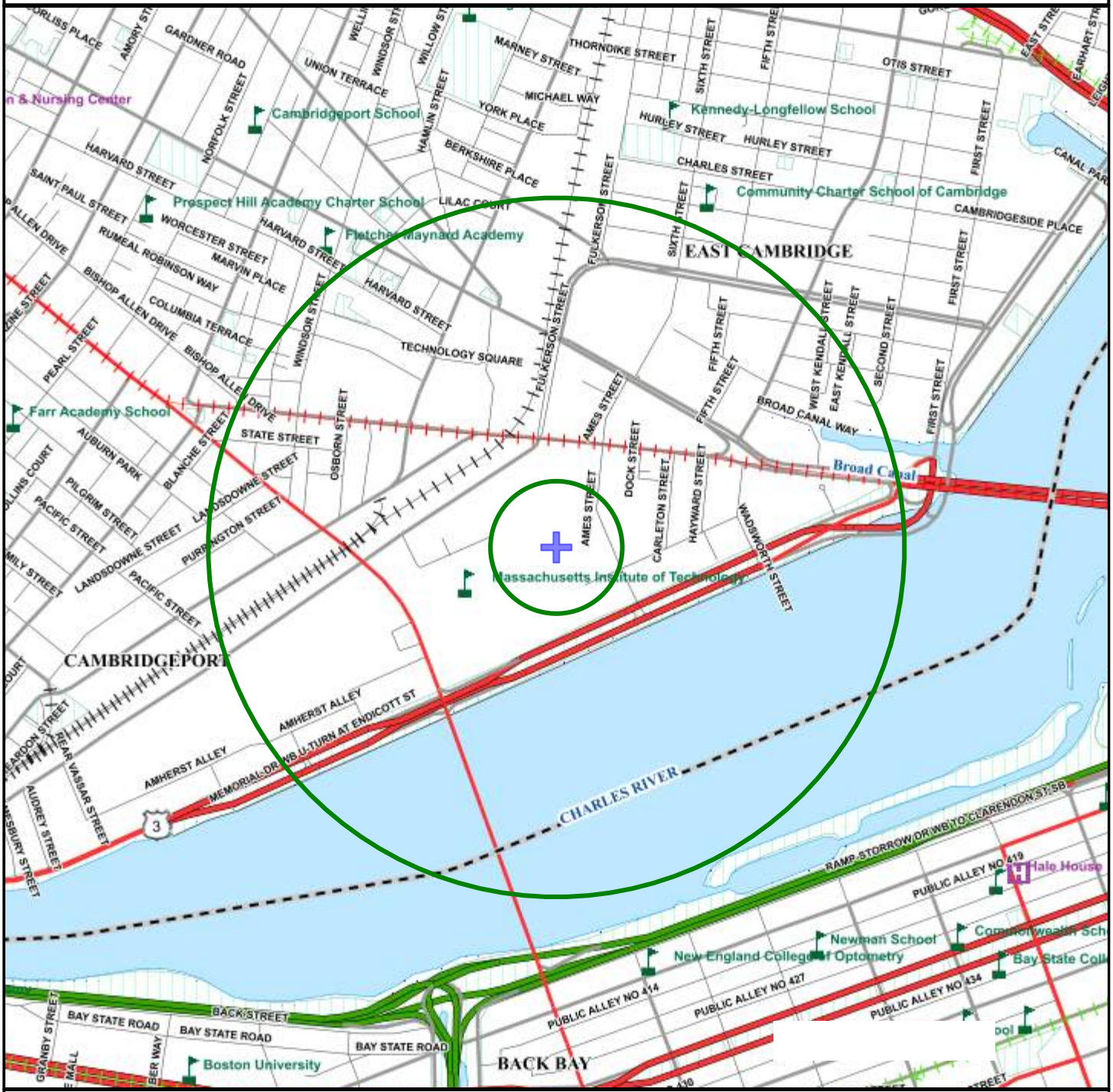
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
MIT BUILDING 55
77 MASSACHUSETTS AVE CAMBRIDGE, MA

NAD83 UTM Meters:
4691911mN , 327935mE (Zone: 19)
September 8, 2021

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

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Charles River	MA72-36	From Watertown Dam (NATID: MA00456), Watertown to the Boston University Bridge, Boston/Cambridge (formerly part of segment MA72-08).	6.10	Miles	(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					Chlorophyll-a	33826
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	32371
					Fish Bioassessments	
					Harmful Algal Blooms	33826
					Nutrient/Eutrophication Biological Indicators	33826
					Oil and Grease	
					PCBs In Fish Tissue	
					pH, High	
					Phosphorus, Total	33826
					Sediment Bioassay (Acute Toxicity Freshwater)	
					Transparency / Clarity	33826
					Unspecified Metals in Sediment	
Charles River	MA72-38	From Boston University Bridge, Boston/Cambridge to mouth at the New Charles River Dam (NATID: MA01092), Boston (formerly part of segment MA72-08).	3.10	Miles	(Flow Regime Modification*)	
					Cause Unknown (Sediment Screening Value (Exceedence))	
					Chlorophyll-a	33826
					Combined Biota/Habitat Bioassessments	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	33826
					Escherichia Coli (E. Coli)	32371
					Harmful Algal Blooms	33826
					Nutrient/Eutrophication Biological Indicators	33826
					Odor	33826
					Oil and Grease	
					PCBs In Fish Tissue	
					Phosphorus, Total	33826
					Salinity	
					Temperature	
					Transparency / Clarity	33826
Chicken Brook	MA72-34	Source, outlet Waseeka Sanctuary Pond, Holliston to mouth at confluence with the Charles River, Medway.	7.40	Miles	Escherichia Coli (E. Coli)	
Crystal Lake	MA72030	Newton.	27.00	Acres	Harmful Algal Blooms	

APPENDIX C

CHARLES RIVER DILUTION CALCULATIONS

StreamStats Report

Region ID: MA
Workspace ID: MA20210908204751816000
Clicked Point (Latitude, Longitude): 42.36888, -71.06549
Time: 2021-09-08 16:48:11 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	313	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.314	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	313	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.314	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	58.3	ft^3/s
7 Day 10 Year Low Flow	29.7	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/)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

NPDES EFFLUENT LIMITS

Dilution Factor	134.3					
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	1467	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	85333	µg/L		
Arsenic	**104**	µg/L	1187	µg/L		
Cadmium	**10.2**	µg/L	0.2169	µg/L		
Chromium III	**323**	µg/L	8887.4	µg/L		
Chromium VI	**323**	µg/L	1524.6	µg/L		
Copper	**242**	µg/L	537.0	µg/L		
Iron	**5000**	µg/L	16000	µg/L		
Lead	160	µg/L	**2.18**	µg/L		
Mercury	**0.739**	µg/L	120.78	µg/L		
Nickel	**1450**	µg/L	5228.5	µg/L		
Selenium	**235.8**	µg/L	666.7	µg/L		
Silver	**35.1**	µg/L	301.8	µg/L		
Zinc	**420**	µg/L	11296.3	µg/L		
Cyanide	**178**	mg/L	693.3	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	40000	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	213.3	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	440.0	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	293.3	µg/L		

Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	**0.5067**	µg/L	---	µg/L
Benzo(a)pyrene	1.0	µg/L	**0.5067**	µg/L	---	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.5067**	µg/L	---	µg/L
Benzo(k)fluoranthene	1.0	µg/L	**0.5067**	µg/L	---	µg/L
Chrysene	1.0	µg/L	**0.5067**	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.5067	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	**0.5067**	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	2667	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

From:	Shannon LaMarre
To:	xiaodan.ruan@mass.gov; Kathleen.Keohane@mass.gov
Cc:	catherine.vakalopoulos@mass.gov; Quincy Pratt
Subject:	7Q10 Value Confirmation
Date:	Friday, September 10, 2021 1:44:31 PM
Attachments:	1 StreamStats.pdf 20210910 Dilution Factor.docx

Hi Xiaodan/Kathleen,

I would like to confirm the following 7Q10 value for a RGP project located in Cambridge, MA.

Site Address: 77 Massachusetts Ave, Cambridge MA
Type of Discharge: Via drain outlet in the Charles River with the approximate latitude and longitude indicated below.
Stormwater Outfall ID: City of Cambridge Outfall D06OF0000

Approximate Lat/Long: 42.358811 N, -71.086907 W

Design Discharge Flow from site: 100 gpm = 0.144 MGD
Upstream StreamStats Generated, 7Q10: 29.7 cfs = 19.2 MGD

Dilution Factor: DF = 134

I have attached a draft calculation sheet which was used to arrive at the above dilution factor.

Can you please confirm these values are appropriate?

Thank you for your help.

Shannon

Shannon LaMarre, EIT
Senior Project Engineer
EIT in MA

SANBORN | HEAD & ASSOCIATES, INC.
D 857.327.9749 | 98 N. Washington Street, Suite 101, Boston, MA 02114

Click here to follow us on LinkedIn | Twitter | Facebook | sanbornhead.com

PURPOSE:
To calculate the dilution factor (DF) in a potential discharge from on-site construction dewatering activities.

METHOD:

$$DF = (Qd + Qs)/Qd$$

Where: DF = Dilution Factor
Qd = Design flow rate of the discharge in million gallons per day (MGD)
Qs = Receiving water 7Q10 flow (MGD) where 7Q10 is the minimum flow for 7 consecutive days with a recurrence interval of 10 years

GIVEN:
1.0 gpm = 0.00144 MGD
1.0 cfs = 0.64632 MGD
Qd = 100 gpm = 0.144 MGD
Qs = 29.7 cfs = 19.2 MGD of flow into the Charles River [Reference 1]

CALCULATION:

$$DF = (0.144 \text{ MGD} + 19.2 \text{ MGD}) / 0.144 \text{ MGD}$$

DF = 134

RESULTS:

The resulting dilution factor to be used when discharging to the Charles River is 134.

REFERENCES:

[1] StreamStats Report.

Accessed online: https://streamstats.usgs.gov/ss/ (Refer to Reference 1)

APPENDIX D

ANALYTICAL DATA REPORT

Eastern Analytical, Inc.

professional laboratory and drilling services

Quincy Pratt
Sanborn, Head & Associates, Inc. (MA)
1 Technology Park Drive
Westford , MA 01886

Laboratory Report for:

Eastern Analytical, Inc. ID:	230518
Client Identification:	MIT Building 55 | 4790.00
Date Received:	8/12/2021

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the written approval of the laboratory.

The following standard abbreviations and conventions apply to all EAI reports:

< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Certifications:
Eastern Analytical, Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012), New York (12072), West Virginia (9910C) and Alabama (41620). Please refer to our website at www.easternanalytical.com for a copy of our certificates and accredited parameters.

References:
- EPA 600/4-79-020, 1983
- Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd edition or noted revision year.
- Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- Hach Water Analysis Handbook, 4th edition, 1992

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director   Date: 8·25·21   # of pages (excluding cover letter): 29

SAMPLE CONDITIONS PAGE

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Temperature upon receipt (°C): 5.1

Received on ice or cold packs (Yes/No): Y

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled		Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
230518.01	20210812 SH-2	8/12/21	8/12/21	06:45	aqueous		Adheres to Sample Acceptance Policy
230518.02	20210812 Outfall	8/12/21	8/12/21	07:30	aqueous		Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

LABORATORY REPORT

EAI ID#: **230518**

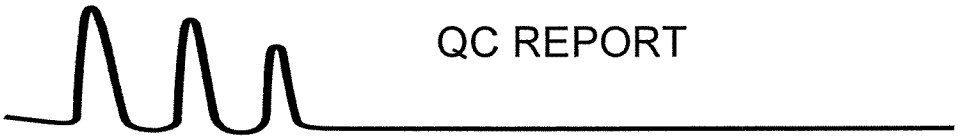
Client: **Sanborn, Head & Associates, Inc. (MA)**
Client Designation: **MIT Building 55 | 4790.00**

Client Sample ID: 20210812 SH-2
Lab Sample ID: 230518.01
Matrix: aqueous
Date Sampled: 8/12/21
Date Received: 8/12/21

Date of Preparation:
Method: 624.1
Analyst: JAK
Units: ug/L

	Result	RL	Dilution Factor	Date Analyzed
Chloromethane	< 2	2	1	8/12/21
Vinyl chloride	< 1	1	1	8/12/21
Bromomethane	< 2	2	1	8/12/21
Chloroethane	< 2	2	1	8/12/21
Trichlorofluoromethane	< 2	2	1	8/12/21
Acrolein	< 50	50	1	8/12/21
Acetone	< 10	10	1	8/12/21
1,1-Dichloroethene	< 0.5	0.5	1	8/12/21
tert-Butyl Alcohol (TBA)	< 30	30	1	8/12/21
Methylene chloride	< 1	1	1	8/12/21
Acrylonitrile	< 50	50	1	8/12/21
Methyl-t-butyl ether(MTBE)	< 1	1	1	8/12/21
tert-amyl methyl ether(TAME)	< 2	2	1	8/12/21
trans-1,2-Dichloroethene	< 1	1	1	8/12/21
Vinyl acetate	< 10	10	1	8/12/21
1,1-Dichloroethane	< 1	1	1	8/12/21
cis-1,2-Dichloroethene	< 1	1	1	8/12/21
2-Butanone(MEK)	< 10	10	1	8/12/21
Chloroform	< 1	1	1	8/12/21
1,1,1-Trichloroethane	< 1	1	1	8/12/21
Carbon tetrachloride	< 1	1	1	8/12/21
Benzene	< 1	1	1	8/12/21
1,2-Dichloroethane	< 1	1	1	8/12/21
Trichloroethene	< 1	1	1	8/12/21
1,2-Dichloropropane	< 1	1	1	8/12/21
Bromodichloromethane	< 0.5	0.5	1	8/12/21
2-Chloroethylvinylether	< 2	2	1	8/12/21
1,4-Dioxane	< 10	10	1	8/12/21
4-Methyl-2-pentanone(MIBK)	< 10	10	1	8/12/21
cis-1,3-Dichloropropene	< 0.5	0.5	1	8/12/21
Toluene	< 1	1	1	8/12/21
trans-1,3-Dichloropropene	< 0.5	0.5	1	8/12/21
1,1,2-Trichloroethane	< 1	1	1	8/12/21
2-Hexanone	< 10	10	1	8/12/21
Tetrachloroethene	< 1	1	1	8/12/21
Dibromochloromethane	< 1	1	1	8/12/21
Chlorobenzene	< 1	1	1	8/12/21
Ethylbenzene	< 1	1	1	8/12/21
mp-Xylene	< 1	1	1	8/12/21
o-Xylene	< 1	1	1	8/12/21
Styrene	< 1	1	1	8/12/21
Bromoform	< 2	2	1	8/12/21
1,1,2,2-Tetrachloroethane	< 1	1	1	8/12/21

	Result	RL	Dilution Factor	Date Analyzed
1,3-Dichlorobenzene	< 1	1	1	8/12/21
1,4-Dichlorobenzene	< 1	1	1	8/12/21
1,2-Dichlorobenzene	< 1	1	1	8/12/21
4-Bromofluorobenzene (surr)	**105 %R**			8/12/21
1,2-Dichlorobenzene-d4	**98 %R**			8/12/21
Toluene-d8 (surr)	**94 %R**			8/12/21



QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637643-77052/A081221V6241

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank (RL)	Blank (MDL)	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 2	< .876	30 (149 %R)	30 (149 %R) (0 RPD)	8/12/2021	ug/L	1 - 205	60	624.1
Vinyl chloride	< 1	< .34	29 (147 %R)	29 (147 %R) (0 RPD)	8/12/2021	ug/L	5 - 195	66	624.1
Bromomethane	< 2	< .554	25 (126 %R)	26 (129 %R) (3 RPD)	8/12/2021	ug/L	15 - 185	61	624.1
Chloroethane	< 2	< .232	25 (127 %R)	26 (131 %R) (3 RPD)	8/12/2021	ug/L	40 - 160	78	624.1
Trichlorofluoromethane	< 2	< .375	24 (121 %R)	24 (122 %R) (1 RPD)	8/12/2021	ug/L	50 - 150	84	624.1
Acrolein	< 50	< .548	< 50 (108 %R)	< 50 (109 %R) (1 RPD)	8/12/2021	ug/L	60 - 140	60	624.1
Acetone	< 10	< 2.387	23 (113 %R)	23 (115 %R) (2 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
1,1-Dichloroethene	< 0.5	< .37	21 (103 %R)	21 (104 %R) (0 RPD)	8/12/2021	ug/L	50 - 150	32	624.1
tert-Butyl Alcohol (TBA)	< 30	< 5.259	120 (122 %R)	120 (124 %R) (2 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
Methylene chloride	< 1	< .545	20 (99 %R)	20 (99 %R) (0 RPD)	8/12/2021	ug/L	60 - 140	28	624.1
Acrylonitrile	< 50	< .302	< 50 (115 %R)	< 50 (115 %R) (0 RPD)	8/12/2021	ug/L	60 - 140	60	624.1
Methyl-t-butyl ether(MTBE)	< 1	< .519	21 (104 %R)	21 (103 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
tert-amyl methyl ether(TAME)	< 2	< .225	21 (106 %R)	21 (106 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
trans-1,2-Dichloroethene	< 1	< .298	21 (104 %R)	21 (104 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	45	624.1
Vinyl acetate	< 10	< .557	14 (70 %R)	13 (67 %R) (5 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
1,1-Dichloroethane	< 1	< .085	21 (106 %R)	21 (106 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	40	624.1
cis-1,2-Dichloroethene	< 1	< .238	22 (108 %R)	22 (108 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
2-Butanone(MEK)	< 10	< .206	23 (114 %R)	23 (114 %R) (0 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
Chloroform	< 1	< .36	20 (102 %R)	20 (102 %R) (0 RPD)	8/12/2021	ug/L	70 - 135	54	624.1
1,1,1-Trichloroethane	< 1	< .227	22 (108 %R)	22 (109 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	36	624.1
Carbon tetrachloride	< 1	< .261	21 (105 %R)	21 (105 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	41	624.1
Benzene	< 1	< .312	21 (106 %R)	21 (106 %R) (0 RPD)	8/12/2021	ug/L	65 - 135	61	624.1
1,2-Dichloroethane	< 1	< .21	22 (112 %R)	22 (110 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	49	624.1
Trichloroethene	< 1	< .359	21 (105 %R)	21 (103 %R) (1 RPD)	8/12/2021	ug/L	65 - 135	48	624.1
1,2-Dichloropropane	< 1	< .285	22 (109 %R)	21 (106 %R) (2 RPD)	8/12/2021	ug/L	35 - 165	55	624.1
Bromodichloromethane	< 0.5	< .079	22 (110 %R)	22 (108 %R) (2 RPD)	8/12/2021	ug/L	65 - 135	56	624.1
2-Chloroethylvinylether	< 2	< .493	24 (121 %R)	24 (119 %R) (2 RPD)	8/12/2021	ug/L	1 - 225	71	624.1
1,4-Dioxane	< 10	<	< 50 (112 %R)	< 50 (111 %R) (1 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
4-Methyl-2-pentanone(MIBK)	< 10	< .411	22 (110 %R)	22 (108 %R) (2 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
cis-1,3-Dichloropropene	< 0.5	< .101	22 (109 %R)	21 (107 %R) (1 RPD)	8/12/2021	ug/L	25 - 175	58	624.1
Toluene	< 1	< .19	19 (95 %R)	19 (97 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	41	624.1
trans-1,3-Dichloropropene	< 0.5	< .08	21 (105 %R)	21 (104 %R) (1 RPD)	8/12/2021	ug/L	50 - 150	86	624.1
1,1,2-Trichloroethane	< 1	< .203	20 (100 %R)	20 (100 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	45	624.1
2-Hexanone	< 10	< .28	20 (98 %R)	20 (98 %R) (0 RPD)	8/12/2021	ug/L	40 - 160	20	624.1
Tetrachloroethene	< 1	< .371	18 (91 %R)	19 (93 %R) (2 RPD)	8/12/2021	ug/L	70 - 130	39	624.1
Dibromochloromethane	< 1	< .225	17 (87 %R)	18 (88 %R) (1 RPD)	8/12/2021	ug/L	70 - 135	50	624.1
Chlorobenzene	< 1	< .247	19 (97 %R)	19 (97 %R) (0 RPD)	8/12/2021	ug/L	65 - 135	53	624.1
Ethylbenzene	< 1	< .213	20 (98 %R)	20 (98 %R) (0 RPD)	8/12/2021	ug/L	60 - 140	63	624.1
mp-Xylene	< 1	< .476	39 (96 %R)	39 (98 %R) (2 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
o-Xylene	< 1	< .298	20 (98 %R)	20 (100 %R) (2 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
Styrene	< 1	< .727	19 (95 %R)	19 (94 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	20	624.1
Bromoform	< 2	< .282	18 (90 %R)	18 (89 %R) (1 RPD)	8/12/2021	ug/L	70 - 130	42	624.1
1,1,2,2-Tetrachloroethane	< 1	< .381	19 (96 %R)	19 (95 %R) (0 RPD)	8/12/2021	ug/L	60 - 140	61	624.1
1,3-Dichlorobenzene	< 1	< .426	18 (92 %R)	18 (92 %R) (0 RPD)	8/12/2021	ug/L	70 - 130	43	624.1
1,4-Dichlorobenzene	< 1	< .375	18 (91 %R)	18 (91 %R) (0 RPD)	8/12/2021	ug/L	65 - 135	57	624.1
1,2-Dichlorobenzene	< 1	< .218	19 (93 %R)	18 (92 %R) (1 RPD)	8/12/2021	ug/L	65 - 135	57	624.1

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637643-77052/A081221V6241

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank (RL)	Blank (MDL)	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
4-Bromofluorobenzene (surr)	104 %R		104 %R	105 %R	8/12/2021	% Rec	70 - 130		624.1
1,2-Dichlorobenzene-d4 (surr)	103 %R		100 %R	100 %R	8/12/2021	% Rec	70 - 130		624.1
Toluene-d8 (surr)	95 %R		93 %R	95 %R	8/12/2021	% Rec	70 - 130		624.1

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID:	20210812 SH-2
Lab Sample ID:	230518.01
Matrix:	aqueous
Date Sampled:	8/12/21
Date Received:	8/12/21
Units:	ug/L
Date of Extraction/Prep:	8/16/21
Date of Analysis:	8/16/21
Analyst:	JMR
Method:	625.1
Dilution Factor:	1
alpha-Terpineol	< 5
Phenol	< 1
2-Chlorophenol	< 1
2,4-Dichlorophenol	< 1
2,4,5-Trichlorophenol	< 1
2,4,6-Trichlorophenol	< 1
Pentachlorophenol	< 5
2-Nitrophenol	< 5
4-Nitrophenol	< 5
2,4-Dinitrophenol	< 10
2-Methylphenol	< 1
3/4-Methylphenol	< 1
2,4-Dimethylphenol	< 5
4-Chloro-3-methylphenol	< 1
4,6-Dinitro-2-methylphenol	< 5
Benzoic Acid	< 50
N-Nitrosodimethylamine	< 1
n-Nitroso-di-n-propylamine	< 0.5
n-Nitrosodiphenylamine	< 1
bis(2-Chloroethyl)ether	< 1
bis(2-chloroisopropyl)ether	< 1
bis(2-Chloroethoxy)methane	< 1
1,3-Dichlorobenzene	< 1
Acetophenone	< 10
1,4-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
1,2,4-Trichlorobenzene	< 1
2-Chloronaphthalene	< 1
4-Chlorophenyl-phenylether	< 1
4-Bromophenyl-phenylether	< 1
Hexachloroethane	< 1
Hexachlorobutadiene	< 1
Hexachlorocyclopentadiene	< 5
Hexachlorobenzene	< 1
4-Chloroaniline	< 1
2,3-Dichloroaniline	< 1
2-Nitroaniline	< 5
3-Nitroaniline	< 5
4-Nitroaniline	< 5
Aniline	< 1
Benzyl alcohol	< 10
Nitrobenzene	< 1
Isophorone	< 1
2,4-Dinitrotoluene	< 2
2,6-Dinitrotoluene	< 2
Benzidine (estimated)	< 5
3,3'-Dichlorobenzidine	< 1

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID:	20210812 SH-2
Lab Sample ID:	230518.01
Matrix:	aqueous
Date Sampled:	8/12/21
Date Received:	8/12/21
Units:	ug/L
Date of Extraction/Prep:	8/16/21
Date of Analysis:	8/16/21
Analyst:	JMR
Method:	625.1
Dilution Factor:	1
Pyridine	< 5
Azobenzene	< 1
Carbazole	< 1
Dimethylphthalate	< 1
Diethylphthalate	< 5
Di-n-butylphthalate	< 5
Butylbenzylphthalate	< 5
bis(2-Ethylhexyl)phthalate	< 5
Di-n-octylphthalate	< 5
Dibenzofuran	< 1
Naphthalene	< 1
2-Methylnaphthalene	< 1
1-Methylnaphthalene	< 1
Acenaphthylene	< 1
Acenaphthene	< 1
Fluorene	< 1
Phenanthrene	**5.3**
Anthracene	**1.9**
Fluoranthene	**8.7**
Pyrene	**8.9**
Benzo[a]anthracene	**4.8**
Chrysene	**4.7**
Benzo[b]fluoranthene	**5.2**
Benzo[k]fluoranthene	**2.1**
Benzo[a]pyrene	**4.5**
Indeno[1,2,3-cd]pyrene	**3.2**
Dibenz[a,h]anthracene	< 1
Benzo[g,h,i]perylene	**2.6**
n-Decane	< 5
n-Octadecane	< 5
2-Fluorophenol (surr)	**40 %R**
Phenol-d6 (surr)	**28 %R**
2,4,6-Tribromophenol (surr)	**77 %R**
Nitrobenzene-D5 (surr)	**71 %R**
2-Fluorobiphenyl (surr)	**73 %R**
p-Terphenyl-D14 (surr)	**70 %R**

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637646-98005/A081621E6251

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank (RL)	Blank (MDL)	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
alpha-Terpineol	< 5	< .17	21 (83 %R)	19 (76 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Phenol	< 1	< .12	16 (33 %R)	15 (30 %R) (10 RPD)	8/16/2021	ug/L	5 - 120	64	625.1
2-Chlorophenol	< 1	< .2	35 (70 %R)	32 (65 %R) (8 RPD)	8/16/2021	ug/L	23 - 134	61	625.1
2,4-Dichlorophenol	< 1	< .31	40 (80 %R)	37 (74 %R) (8 RPD)	8/16/2021	ug/L	39 - 135	50	625.1
2,4,5-Trichlorophenol	< 1	< .33	40 (80 %R)	37 (74 %R) (8 RPD)	8/16/2021	ug/L	30 - 130	20	625.1
2,4,6-Trichlorophenol	< 1	< .48	40 (80 %R)	37 (74 %R) (8 RPD)	8/16/2021	ug/L	37 - 144	58	625.1
Pentachlorophenol	< 5	< 1.1	36 (72 %R)	33 (66 %R) (9 RPD)	8/16/2021	ug/L	14 - 176	86	625.1
2-Nitrophenol	< 5	< .44	40 (80 %R)	37 (74 %R) (8 RPD)	8/16/2021	ug/L	29 - 182	55	625.1
4-Nitrophenol	< 5	< .22	17 (34 %R)	15 (31 %R) (11 RPD)	8/16/2021	ug/L	1 - 132	131	625.1
2,4-Dinitrophenol	< 10	< 1.5	40 (79 %R)	36 (73 %R) (8 RPD)	8/16/2021	ug/L	1 - 191	132	625.1
2-Methylphenol	< 1	< .4	34 (67 %R)	30 (61 %R) (10 RPD)	8/16/2021	ug/L	30 - 130	20	625.1
3/4-Methylphenol	< 1	< .42	33 (67 %R)	30 (61 %R) (9 RPD)	8/16/2021	ug/L	30 - 130	20	625.1
2,4-Dimethylphenol	< 5	< 1.4	38 (77 %R)	36 (71 %R) (7 RPD)	8/16/2021	ug/L	32 - 120	58	625.1
4-Chloro-3-methylphenol	< 1	< .26	40 (80 %R)	37 (75 %R) (7 RPD)	8/16/2021	ug/L	22 - 147	73	625.1
4,6-Dinitro-2-methylphenol	< 5	< 3.3	43 (86 %R)	39 (78 %R) (9 RPD)	8/16/2021	ug/L	1 - 181	203	625.1
Benzoic Acid	< 50	< 5.7	< 50 (26 %R)	< 50 (21 %R) (18 RPD)	8/16/2021	ug/L	15 - 130	50	625.1
N-Nitrosodimethylamine	< 1	< .11	13 (54 %R)	13 (51 %R) (6 RPD)	8/16/2021	ug/L	15 - 140	20	625.1
n-Nitroso-di-n-propylamine	< 0.5	< .22	20 (80 %R)	18 (73 %R) (9 RPD)	8/16/2021	ug/L	1 - 230	87	625.1
n-Nitrosodiphenylamine	< 1	< .068	21 (85 %R)	20 (78 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
bis(2-Chloroethyl)ether	< 1	< .11	19 (76 %R)	18 (72 %R) (6 RPD)	8/16/2021	ug/L	12 - 158	108	625.1
bis(2-chloroisopropyl)ether	< 1	< .13	18 (72 %R)	17 (67 %R) (7 RPD)	8/16/2021	ug/L	36 - 166	76	625.1
bis(2-Chloroethoxy)methane	< 1	< .2	20 (82 %R)	19 (75 %R) (9 RPD)	8/16/2021	ug/L	33 - 184	54	625.1
1,3-Dichlorobenzene	< 1	< .15	17 (68 %R)	16 (66 %R) (4 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Acetophenone	< 10	< 8.8	20 (79 %R)	18 (73 %R) (9 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
1,4-Dichlorobenzene	< 1	< .11	17 (69 %R)	17 (67 %R) (4 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
1,2-Dichlorobenzene	< 1	< .13	17 (70 %R)	17 (67 %R) (5 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
1,2,4-Trichlorobenzene	< 1	< .09	19 (75 %R)	17 (70 %R) (7 RPD)	8/16/2021	ug/L	44 - 142	50	625.1
2-Chloronaphthalene	< 1	< .11	20 (81 %R)	18 (73 %R) (9 RPD)	8/16/2021	ug/L	60 - 120	24	625.1
4-Chlorophenyl-phenylether	< 1	< .059	21 (84 %R)	19 (77 %R) (8 RPD)	8/16/2021	ug/L	25 - 158	61	625.1
4-Bromophenyl-phenylether	< 1	< .14	21 (85 %R)	20 (79 %R) (7 RPD)	8/16/2021	ug/L	53 - 127	43	625.1
Hexachloroethane	< 1	< .15	18 (72 %R)	17 (70 %R) (4 RPD)	8/16/2021	ug/L	40 - 120	52	625.1
Hexachlorobutadiene	< 1	< .073	19 (74 %R)	17 (70 %R) (7 RPD)	8/16/2021	ug/L	24 - 120	62	625.1
Hexachlorocyclopentadiene	< 5	< .21	17 (67 %R)	15 (59 %R) (13 RPD)	8/16/2021	ug/L	15 - 140	20	625.1
Hexachlorobenzene	< 1	< .12	22 (86 %R)	20 (81 %R) (7 RPD)	8/16/2021	ug/L	1 - 152	55	625.1
4-Chloroaniline	< 1	< .13	21 (85 %R)	20 (79 %R) (7 RPD)	8/16/2021	ug/L	15 - 140	20	625.1
2,3-Dichloroaniline	< 1	< .11	20 (82 %R)	19 (75 %R) (9 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
2-Nitroaniline	< 5	< .18	22 (87 %R)	20 (81 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
3-Nitroaniline	< 5	< .13	22 (86 %R)	20 (80 %R) (7 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
4-Nitroaniline	< 5	< .23	22 (88 %R)	20 (81 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Aniline	< 1	< .13	18 (72 %R)	17 (67 %R) (7 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Benzyl alcohol	< 10	< .35	19 (76 %R)	17 (70 %R) (9 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Nitrobenzene	< 1	< .21	20 (79 %R)	18 (73 %R) (7 RPD)	8/16/2021	ug/L	35 - 180	62	625.1
Isophorone	< 1	< .16	21 (83 %R)	19 (78 %R) (7 RPD)	8/16/2021	ug/L	21 - 196	93	625.1
2,4-Dinitrotoluene	< 2	< .14	22 (88 %R)	21 (82 %R) (8 RPD)	8/16/2021	ug/L	39 - 139	42	625.1
2,6-Dinitrotoluene	< 2	< .14	22 (88 %R)	20 (81 %R) (8 RPD)	8/16/2021	ug/L	50 - 158	48	625.1
Benzidine (estimated)	< 5	< .41	19 (75 %R)	18 (73 %R) (3 RPD)	8/16/2021	ug/L	1 - 200	50	625.1

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637646-98005/A081621E6251

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank (RL)	Blank (MDL)	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
3,3'-Dichlorobenzidine	< 1	< .27	21 (82 %R)	19 (78 %R) (6 RPD)	8/16/2021	ug/L	1 - 262	108	625.1
Pyridine	< 5	< .18	12 (46 %R)	11 (43 %R) (7 RPD)	8/16/2021	ug/L	15 - 140	20	625.1
Azobenzene	< 1	< .14	21 (85 %R)	20 (79 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Carbazole	< 1	< .12	21 (85 %R)	20 (79 %R) (7 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Dimethylphthalate	< 1	< .11	21 (83 %R)	20 (78 %R) (6 RPD)	8/16/2021	ug/L	1 - 120	183	625.1
Diethylphthalate	< 5	< .11	22 (88 %R)	21 (82 %R) (6 RPD)	8/16/2021	ug/L	1 - 120	100	625.1
Di-n-butylphthalate	< 5	< .64	23 (91 %R)	21 (85 %R) (7 RPD)	8/16/2021	ug/L	1 - 120	47	625.1
Butylbenzylphthalate	< 5	< .14	22 (89 %R)	21 (83 %R) (7 RPD)	8/16/2021	ug/L	1 - 152	60	625.1
bis(2-Ethylhexyl)phthalate	< 5	< .27	22 (89 %R)	21 (84 %R) (6 RPD)	8/16/2021	ug/L	8 - 158	82	625.1
Di-n-octylphthalate	< 5	< .2	23 (92 %R)	22 (87 %R) (5 RPD)	8/16/2021	ug/L	4 - 146	69	625.1
Dibenzofuran	< 1	< .11	21 (83 %R)	19 (76 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
Naphthalene	< 1	< .088	18 (73 %R)	17 (68 %R) (7 RPD)	8/16/2021	ug/L	21 - 133	65	625.1
2-Methylnaphthalene	< 1	< .11	19 (76 %R)	17 (69 %R) (9 RPD)	8/16/2021	ug/L	40 - 140	65	625.1
1-Methylnaphthalene	< 1	< .12	19 (76 %R)	18 (70 %R) (8 RPD)	8/16/2021	ug/L	40 - 140	65	625.1
Acenaphthylene	< 1	< .11	19 (75 %R)	17 (69 %R) (9 RPD)	8/16/2021	ug/L	33 - 145	74	625.1
Acenaphthene	< 1	< .11	19 (77 %R)	17 (69 %R) (11 RPD)	8/16/2021	ug/L	47 - 145	48	625.1
Fluorene	< 1	< .093	19 (77 %R)	18 (71 %R) (8 RPD)	8/16/2021	ug/L	59 - 121	38	625.1
Phenanthrene	< 1	< .11	19 (76 %R)	18 (71 %R) (7 RPD)	8/16/2021	ug/L	54 - 120	39	625.1
Anthracene	< 1	< .13	19 (77 %R)	18 (72 %R) (8 RPD)	8/16/2021	ug/L	27 - 133	66	625.1
Fluoranthene	< 1	< .12	19 (74 %R)	17 (70 %R) (6 RPD)	8/16/2021	ug/L	26 - 137	66	625.1
Pyrene	< 1	< .11	19 (76 %R)	17 (69 %R) (9 RPD)	8/16/2021	ug/L	52 - 120	49	625.1
Benzo[a]anthracene	< 1	< .17	19 (76 %R)	18 (70 %R) (7 RPD)	8/16/2021	ug/L	33 - 143	53	625.1
Chrysene	< 1	< .14	19 (77 %R)	18 (72 %R) (5 RPD)	8/16/2021	ug/L	17 - 168	87	625.1
Benzo[b]fluoranthene	< 1	< .095	20 (80 %R)	18 (73 %R) (9 RPD)	8/16/2021	ug/L	24 - 159	71	625.1
Benzo[k]fluoranthene	< 1	< .14	19 (77 %R)	19 (75 %R) (3 RPD)	8/16/2021	ug/L	11 - 162	63	625.1
Benzo[a]pyrene	< 1	< .058	19 (78 %R)	18 (73 %R) (7 RPD)	8/16/2021	ug/L	17 - 163	72	625.1
Indeno[1,2,3-cd]pyrene	< 1	< .13	20 (78 %R)	18 (71 %R) (10 RPD)	8/16/2021	ug/L	1 - 171	99	625.1
Dibenz[a,h]anthracene	< 1	< .16	19 (76 %R)	17 (67 %R) (13 RPD)	8/16/2021	ug/L	1 - 227	126	625.1
Benzo[g,h,i]perylene	< 1	< .14	19 (74 %R)	15 (60 %R) (21 RPD)	8/16/2021	ug/L	1 - 219	97	625.1
n-Decane	< 5	< .16	15 (62 %R)	15 (60 %R) (4 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
n-Octadecane	< 5	< .5	22 (86 %R)	20 (80 %R) (7 RPD)	8/16/2021	ug/L	40 - 140	20	625.1
2-Fluorophenol (surr)	40 %R		38 %R	34 %R	8/16/2021	% Rec	15 - 110		625.1
Phenol-d6 (surr)	28 %R		31 %R	28 %R	8/16/2021	% Rec	15 - 110		625.1
2,4,6-Tribromophenol (surr)	71 %R		82 %R	76 %R	8/16/2021	% Rec	15 - 110		625.1
Nitrobenzene-D5 (surr)	70 %R		79 %R	73 %R	8/16/2021	% Rec	30 - 130		625.1
2-Fluorobiphenyl (surr)	74 %R		81 %R	73 %R	8/16/2021	% Rec	30 - 130		625.1
p-Terphenyl-D14 (surr)	74 %R		83 %R	77 %R	8/16/2021	% Rec	30 - 130		625.1

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**
Client Designation: **MIT Building 55 | 4790.00**

Client Sample ID:	20210812 SH-2
Lab Sample ID:	230518.01
Matrix:	aqueous
Date Sampled:	8/12/21
Date Received:	8/12/21

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Method	Analyst
1,2-Dibromoethane(EDB)	< 0.02	0.02	1	ug/L	8/13/21	11:46	8011/504	AR
Dibromochloropropane (DBCP)	< 0.02	0.02	1	ug/L	8/13/21	11:46	8011/504	AR
1,1,1,2-Tetrachloroethane (surr)	**86 %R**			%	8/13/21	11:46	8011/504	AR

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637644-39866/A081321E5041

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dibromoethane(EDB)	< 0.02	0.10 (101 %R)	0.10 (103 %R) (2 RPD)	8/13/2021	ug/L	70 - 130	20	8011/504
Dibromochloropropane (DBCP)	< 0.02	0.10 (101 %R)	0.10 (101 %R) (0 RPD)	8/13/2021	ug/L	70 - 130	20	8011/504
1,1,1,2-Tetrachloroethane (surr)	101 %R	91 %R	94 %R	8/13/2021	% Rec	65 - 135	20	8011/504

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID:	20210812 SH-2
Lab Sample ID:	230518.01
Matrix:	aqueous
Date Sampled:	8/12/21
Date Received:	8/12/21
Units:	mg/L
Date of Extraction/Prep:	8/17/21
Date of Analysis:	8/17/21
Analyst:	JLB
Method:	1664B
Dilution Factor:	1
TPH(SGTHEM)	**7.1**

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Batch ID: 637647-85018/A081721TPH161

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
TPH(SGTHEM)	< 5	17 (85 %R)	18 (89 %R) (5 RPD)	8/17/2021	mg/L	64 - 132	34	1664B

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID:	20210812 SH-2
Lab Sample ID:	230518.01
Matrix:	aqueous
Date Sampled:	8/12/21
Date Received:	8/12/21
Units:	ug/L
Date of Extraction/Prep:	8/16/21
Date of Analysis:	8/17/21
Analyst:	MB
Method:	608.3
Dilution Factor:	1
PCB-1016	< 0.2
PCB-1221	< 0.2
PCB-1232	< 0.2
PCB-1242	< 0.2
PCB-1248	< 0.2
PCB-1254	< 0.2
PCB-1260	< 0.2
PCB-1262	< 0.2
PCB-1268	< 0.2
TMX (surr)	**82 %R**
DCB (surr)	**77 %R**

Acid clean-up was performed on the samples and associated batch QC.

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Batch ID: 637646-97523/A081621PB6081

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.2	1.6 (81 %R)	1.4 (72 %R) (13 RPD)	8/17/2021	ug/L	50 - 140	36	608.3
PCB-1221	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1232	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1242	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1248	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1254	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1260	< 0.2	1.6 (78 %R)	1.4 (69 %R) (13 RPD)	8/17/2021	ug/L	8 - 140	38	608.3
PCB-1262	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
PCB-1268	< 0.2	< 0.2 (%R N/A)	< 0.2 (%R N/A) (RPD N/A)	8/17/2021	ug/L			608.3
TMX (surr)	81 %R	87 %R	74 %R	8/17/2021	% Rec	30 - 150		608.3
DCB (surr)	88 %R	90 %R	80 %R	8/17/2021	% Rec	30 - 150		608.3

*/! Flagged analyte recoveries deviated from the QA/QC limits. Data that impacts sample results are noted on the sample report.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID: 20210812 SH-2

Lab Sample ID: 230518.01
Matrix: aqueous
Date Sampled: 8/12/21
Date Received: 8/12/21

		Analysis			
	Units	Date	Time	Method	Analyst
Solids Suspended	**2300**	mg/L	08/16/21	14:45	2540D-11	CF
Chloride	**670**	mg/L	08/18/21	7:42	300.0	KD
Cyanide Total	**0.13**	mg/L	08/23/21	11:33	ASTM D7511-09	KD
Ammonia-N	**0.22**	mg/L	08/18/21	12:26	TM NH3-001	SEL
Total Residual Chlorine	< 0.05	mg/L	08/12/21	16:30	4500CIG-00	AMB
pH	**7.36**	SU	08/12/21	15:55	4500H+B-11	AMB

Sample ID: 20210812 Outfall

Lab Sample ID: 230518.02
Matrix: aqueous
Date Sampled: 8/12/21
Date Received: 8/12/21

		Analysis			
	Units	Date	Time	Method	Analyst
Solids Suspended	**5**	mg/L	08/13/21	16:08	2540D-11	HEH
Chloride	**150**	mg/L	08/18/21	7:59	300.0	KD
Ammonia-N	**0.097**	mg/L	08/18/21	12:29	TM NH3-001	SEL
pH	**7.36**	SU	08/12/21	15:56	4500H+B-11	AMB

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	91 (97 %R)	98 (105 %R) (7 RPD)	mg/L	8/16/21	90 - 110	20	2540D-11
Chloride	< 1	20 (98 %R)	19 (97 %R) (1 RPD)	mg/L	8/17/21	90 - 110	20	300.0
Cyanide Total	< 0.005	0.10 (103 %R)	0.11 (114 %R) (10 RPD)	mg/L	8/23/21	84 - 116	20	ASTM D7511-09
Ammonia-N	< 0.05	2.0 (100 %R)	1.9 (94 %R) (5 RPD)	mg/L	8/18/21	87 - 104	20	TM NH3-001
Total Residual Chlorine	< 0.05	0.05 (100 %R)	0.05 (100 %R) (0 RPD)	mg/L	8/12/21	80 - 120	20	4500CIG-00
pH		6.0 (100 %R)	6.0 (100 %R) (0 RPD)	SU	8/12/21	5.97 - 6.1	10	4500H+B-11

*/! Flagged analyte recoveries deviated from the QA/QC limits. Unless noted, flagged data does not impact the sample data.

LABORATORY REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Sample ID:	20210812 SH-2	20210812 Outfall
Lab Sample ID:	230518.01	230518.02
Matrix:	aqueous	aqueous
Date Sampled:	8/12/21	8/12/21
Date Received:	8/12/21	8/12/21

			Analytical Matrix	Units	Date of Analysis	Method	Analyst
Chromium (VI)	< 10	< 10	AqDis	ug/L	8/12/21	7196A	RJ
Chromium (VI)	< 10	< 10	AqTot	ug/L	8/12/21	7196A	RJ
Antimony	**3.0**	< 0.5	AqTot	ug/L	8/18/21	200.8	DS
Arsenic	**45**	**1.1**	AqTot	ug/L	8/17/21	200.8	DS
Cadmium	**1.6**	< 0.1	AqTot	ug/L	8/17/21	200.8	DS
Chromium	**180**	**0.82**	AqTot	ug/L	8/17/21	200.8	DS
Copper	**370**	**3.2**	AqTot	ug/L	8/17/21	200.8	DS
Iron	**110000**	**880**	AqTot	ug/L	8/17/21	200.8	DS
Lead	**630**	**2.9**	AqTot	ug/L	8/17/21	200.8	DS
Nickel	**100**	**1.3**	AqTot	ug/L	8/17/21	200.8	DS
Selenium	**2.5**	< 0.5	AqTot	ug/L	8/17/21	200.8	DS
Silver	**1.2**	< 0.1	AqTot	ug/L	8/17/21	200.8	DS
Zinc	**490**	**8.3**	AqTot	ug/L	8/17/21	200.8	DS
Chromium (III)	**180**	< 10	AqTot	ug/L	8/17/21	200.8	DS
Total Hardness (as CaCO3)	**290**	**72**	AqTot	mg/L	8/17/21	200.8	DS

QC REPORT

EAI ID#: **230518**

Client: **Sanborn, Head & Associates, Inc. (MA)**

Client Designation: **MIT Building 55 | 4790.00**

Parameter Name	Blank	LCS	LCSD		Units	Date of Analysis	Limits	RPD	Method
Antimony	< 0.0005	1.1 (107 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Arsenic	< 0.0005	1.1 (107 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Cadmium	< 0.0001	1.0 (101 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Chromium	< 0.0005	1.1 (107 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Copper	< 0.0001	1.1 (110 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Iron	< 0.05	11 (104 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Lead	< 0.0001	1.0 (105 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Nickel	< 0.0001	1.0 (104 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Selenium	< 0.0005	1.1 (111 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Silver	< 0.0001	0.011 (110 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Zinc	< 0.001	1.0 (104 %R)		NA	mg/L	8/17/21	85 - 115	20	200.8
Chromium (VI)	< 0.01	0.29 (95 %R)		NA	mg/L	8/12/21	85 - 115	20	7196A
Chromium (VI)	< 0.01	0.29 (95 %R)		NA	mg/L	8/12/21	85 - 115	20	7196A

*/! Flagged analyte recoveries deviated from the QA/QC limits. Unless noted, flagged data does not impact the sample data.

PHOENIX
Environmental Laboratories, Inc.

Tuesday, August 17, 2021

Attn: Front Office
Eastern Analytical
25 Chenell Drive
Concord, NH 03301

Project ID: 230518
SDG ID: GCI96665
Sample ID#s: CI96665, CI96668

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

August 17, 2021

SDG I.D.: GCI96665

Project ID: 230518

Client Id	Lab Id	Matrix
20210812 SH-2	CI96665	WATER
20210812 OUTFALL	CI96668	WATER

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 17, 2021

FOR: Attn: Front Office
Eastern Analytical
25 Chenell Drive
Concord, NH 03301

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		08/12/21	6:45
Location Code:	EASTANAL-NH	Received by:	SW	08/13/21	10:56
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	55506				

Laboratory Data

SDG ID: GCI96665
Phoenix ID: CI96665

Project ID: 230518
Client ID: 20210812 SH-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Mercury	< 0.0002	0.0002	mg/L	1	08/17/21	AT	SW7470/E245.1
Mercury Digestion	Completed				08/16/21	AB/AB	SW7470/245.1
Ethanol	ND	400	ug/L	1	08/13/21	HM	SW8260C

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 17, 2021
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

August 17, 2021

FOR: Attn: Front Office
Eastern Analytical
25 Chenell Drive
Concord, NH 03301

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:		08/12/21	7:30
Location Code:	EASTANAL-NH	Received by:	SW	08/13/21	10:56
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	55506				

Laboratory Data

SDG ID: GCI96665
Phoenix ID: CI96668

Project ID: 230518
Client ID: 20210812 OUTFALL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Mercury	< 0.0002	0.0002	mg/L	1	08/17/21	AT	SW7470/E245.1
Mercury Digestion	Completed				08/16/21	AB/AB	SW7470/245.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
August 17, 2021
Reviewed and Released by: Rashmi Makol, Project Manager

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 17, 2021

QA/QC Data

SDG I.D.: GCI96665

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 587918 (mg/L), QC Sample No: CI97282 (CI96665, CI96668)													
Mercury - Water	BRL	0.0002	<0.0002	<0.0002	NC	109			98.5	97.1	1.4	75 - 125	30

Comment:

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

August 17, 2021

QA/QC Data

SDG I.D.: GCI96665

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 587943 (ug/L), QC Sample No: CI96665 (CI96665)										
Oxygenates - Water										
Ethanol	ND	200	95	97	2.1	102	106	3.8	70 - 130	30

Comment:

A blank MS/MSD was analyzed with this batch.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
August 17, 2021

Tuesday, August 17, 2021

Criteria: None

State: MA

Sample Criteria Exceedances Report

GCI96665 - EASTANAL-NH

25

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
*** No Data to Display ***								

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Comments

August 17, 2021 SDG I.D.: GCI96665

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.

CHAIN-OF-CUSTODY RECORD

WCICE 7.0

Eastern Analytical, Inc.
professional laboratory and drilling services

EAI ID# 230518

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
20210812 SH-2	8/12/2021 06:45	aqueous	Subcontract - Mercury Cold Vapor (PEL)	96665
20210812 SH-2	8/12/2021 06:45	aqueous	Subcontract - Ethanol Method 8260B	~~96666~~ (A)
20210812 SH-2	8/12/2021 06:45	aqueous	Subcontract - Mercury Cold Vapor (PEL) (DISSOLVED, MERCURY) ON HOLD	96667
20210812 Outfall	8/12/2021 07:30	aqueous	Subcontract - Mercury Cold Vapor (PEL)	96668

EAI ID# 230518 **Project State: MA**

Project ID:

Company Phoenix Environmental Labs
Address 587 East Middle Turnpike
Address Manchester , CT 06040
Account #
Phone # (860) 645-1102

Results Needed: Preferred Date: Standard

RUSH Due Date: _____

QC Deliverables

☐ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:

Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

5 DAY TAT
MA RGP Project:
Report Ethanol in mg/L Units
Dissolved Mercury On HOLD

client supplied bottles

PO #:55506 **EAI ID# 230518**

Data Deliverable (circle)

Excel NH EMD EQuIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: _____

Relinquished by	Date/Time	Received by
	8/12/21 1630	VPS
Fedex	8/13/21 1056	

Relinquished by	Date/Time	Received by

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525 customerservice@easternanalytical.com

CHAIN-OF-CUSTODY RECORD

WCice 7.0

Eastern Analytical, Inc.
professional laboratory and drilling services

28

EAI ID# 230518

Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
20210812 Outfall	8/12/2021 07:30	aqueous	Subcontract - Mercury Cold Vapor (PEL) DISSOLVED MERCURY ON HOLD	96669

EAI ID# 230518 **Project State: MA**

Project ID:

Company Phoenix Environmental Labs
Address 587 East Middle Turnpike
Address Manchester , CT 06040
Account #
Phone # (860) 645-1102

Results Needed: **Preferred Date: Standard**

RUSH Due Date: _____

QC Deliverables

☐ A ☐ A+ ☐ B ☐ B+ ☐ C ☐ MA MCP

Notes about project:

Email login confirmation, pdf of results and invoice to customerservice@easternanalytical.com.

5 DAY TAT
MA RGP Project: Client supplied bottles
Report Ethanol in mg/L Units
Dissolved Mercury On HOLD

PO #:55506 **EAI ID# 230518**

Data Deliverable (circle)

Excel NH EMD EQuIS ME EGAD

Call prior to analyzing, if RUSH charges will be applied.

Samples Collected by: _____

Relinquished by	Date/Time	Received by
	8/12/21 1630	UPS
Fedex	8/13/21 1056	
Relinquished by	**Date/Time**	**Received by**

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525 customerservice@easternanalytical.com

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

230518

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 MTBE ONLY; 524.2; 8260 624 VTICs; 1,4 DIOXANE; 8021; 8015 GRO MAVPH	SVOC: 8270 625 PAH EDB DBCP ABN; TPH8100 LI L2; 8015 DRO MAEPH; PEST 608 PCB 608 PEST 808I PCB 808Z; OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HER8	INORGANICS: BOD CBOD TS TSS TDS; Br Cl F SO4 NO2 NO2NO3; TKN T. PHOS. NH3 O. PHOS. TN; pH SPEC. CON. T. RES. CHLORINE T. ALK.; COD PHENOLS TOC OOC; TOTAL CYANIDE TOTAL SULFIDE; REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: TOTAL COLIFORM FECAL COLIFORM E. COLI; ENTEROCOCCI HETEROTROPHIC PLATE COUNT	METALS: DISSOLVED METALS (LIST BELOW); TOTAL METALS (LIST BELOW)	OTHER: NPES RGP Pkg; Hardness	# OF CONTAINERS	NOTES MEOH VIAL #
20210812 SH-2	8/12/21 0645	GW	G						H	X	X	22	H = HCL
20210812 Outfall	8/12/21 0730	SW	G				X	X		X	X	6	
MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER							S	–	N	N	N		
PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH													

PROJECT MANAGER: Quincy Pratt
COMPANY: SHA
ADDRESS: 1 Technology Park Dr
CITY: Westford STATE: MA ZIP: 01886
PHONE: 978-392-0900 EXT.:
E-MAIL: qpratt@sanbornhead.com
SITE NAME: MIT Building 55
PROJECT #: 4790.00
STATE: NH (MA) ME VT OTHER:
REGULATORY PROGRAM: NPDES: (RGP) POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

QA/QC REPORTING
A B C
MA MCP
TEMP. 5.1 °C
ICE? (YES) NO

REPORTING OPTIONS
PRELIMS: (YES) OR NO

ELECTRONIC OPTIONS
(PDF) EXCEL EQUIS
OTHER

TURN AROUND TIME
24hr* 4Bhr*
3-4 Days*
(5 Day) 7 Day
10 Day
*Pre-approval Required

SAMPLER(S): M. Stein

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
	8/12/21	0915	
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

METALS: B RCRA 13 PP Fe, Mn Pb, Cu
OTHER METALS: Ag, As, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn, Fe, Hg
SAMPLES FIELD FILTERED? [X] YES [ ] NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

Hex Cr, Tr. Cr (lab calc)

NPDES RGP minimum levels (detection limits) must be met

SITE HISTORY:
SUSPECTED CONTAMINATION:
FIELD READINGS:

Eastern Analytical, Inc.
professional laboratory and drilling services
51 Antrim Avenue | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | E-MAIL: CUSTOMERSERVICE@EASTERNANALYTICAL.COM | WWW.EASTERNANALYTICAL.COM

(WHITE: Lab Copy GREEN: Customer Copy)

APPENDIX E

SAFETY DATA SHEETS

The Pulsatron Series HV designed for high viscosity applications for precise and accurate metering control. The Series HV offers manual control over stroke length and stroke rate as standard with the option to choose between 4-20mA and external pace inputs for automatic control.

Five distinct models are available, having pressure capabilities to 150 PSIG (10 BAR) @ 12 GPD (1.9 lph), and flow capacities to 240 GPD (37.9 lph) @ 80 PSIG (5.6 BAR), with a turndown ratio of 100:1. Metering performance is reproducible to within ± 2% of maximum capacity.

Features

- Automatic Control, available with 4-20mADC direct or external pacing, with stop function.
- Manual Control by on-line adjustable stroke rate and stroke length.
- Auto-Off-Manual switch.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Panel Mounted Fuse.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Indicator Lights, panel mounted.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Viscosities to 20,000 CPS.

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

Series HV

Specifications and Model Selection

MODEL		LVB3	LVF4	LVG4	LVG5	LVH7
Capacity	GPH	0.50	1.00	2.00	4.00	10.00
nominal	GPD	12	24	48	96	240
(max.)	LPH	1.9	3.8	7.6	15.1	37.9
Pressure	PSIG	150	150	110	110	80
(max.)	BAR	10	10	7	7	5.6
Connections:	Tubing	(S) .50" I.D. X .75" O.D. .38" I.D. X .50" OD (LVB3 & F4 only) (S & D) .50" I.D. X .75" O.D. (LVG4,G5 & H7 only)				

Engineering Data

Pump Head Materials Available: GFPPL, PVC, PVDF, 316 SS

Diaphragm: PTFE-faced CSPE-backed

Check Valves Materials Available:

Seats/O-Rings: PTFE, CSPE, Viton

Balls: Ceramic, PTFE, 316 SS, Alloy C

Fittings Materials Available: GFPPL, PVC, PVDF

Bleed Valve: Same as fitting and check valve selected, except 316SS

Injection Valve & Foot Valve Assy: Same as fitting and check valve selected

Tubing: Clear PVC, White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility: +/- 2% at maximum capacity

Viscosity Max CPS: 20,000 CPS

Stroke Frequency Max SPM: 125

Stroke Frequency Turn-Down Ratio: 10:1

Stroke Length Turn-Down Ratio: 10:1

Power Input: 115 VAC/50-60 HZ/1 ph, 230 VAC/50-60 HZ/1 ph

Average Current Draw:

@ 115 VAC; Amps: 1.0 Amps

@ 230 VAC; Amps: 0.5 Amps @ 230 VAC

Peak Input Power: 300 Watts

Average Input Power @ Max SPM: 130 Watts

Custom Engineered Designs – Pre-Engineered Systems

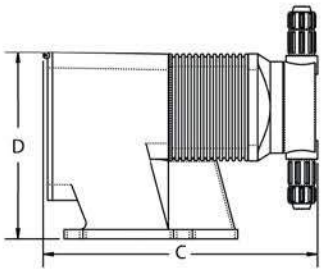
Pre-Engineered Systems

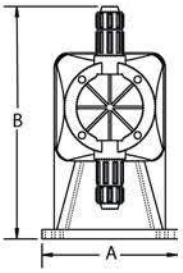
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HDPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

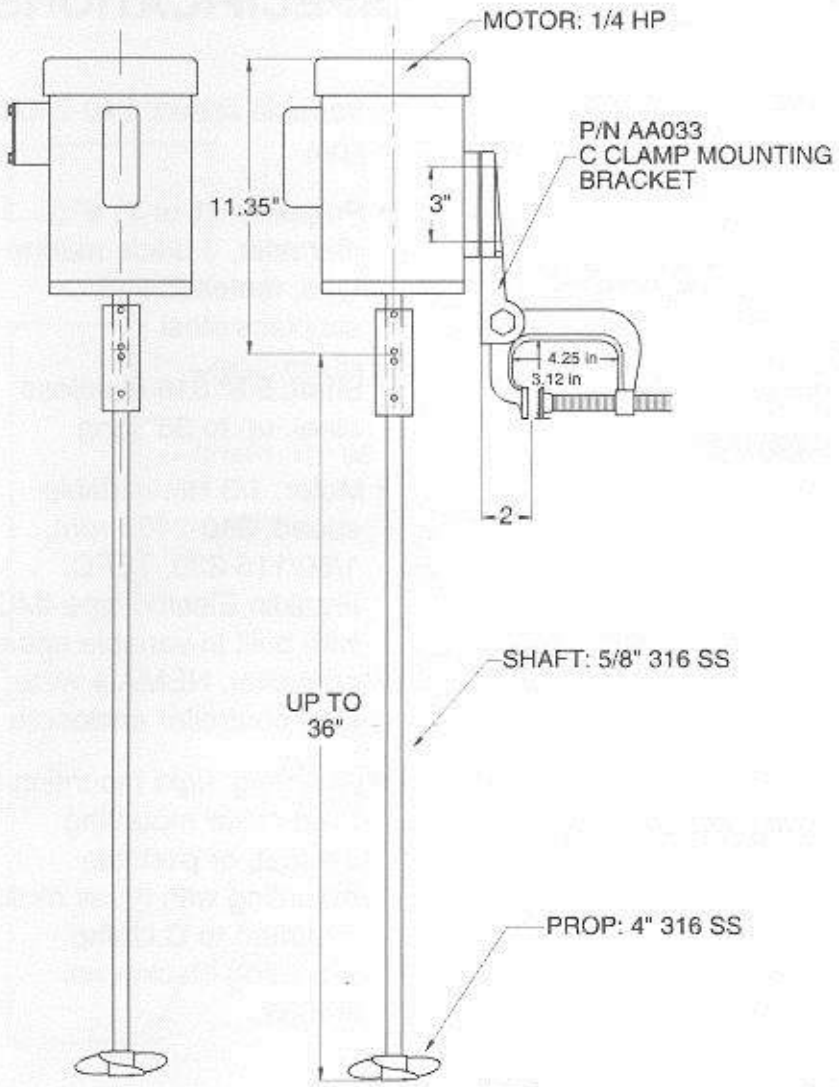
Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

NOTE: Inches X 2.54 = cm





MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

- Speed: 1,725 rpm
- Propeller: (1 or 2) 4" diameter, 3 blade marine type, material: 316 stainless steel
- Shaft: 5/8" 316 stainless steel, up to 36" long
- Motor: 1/4 HP, 1,725 rpm, 1/60/115-230, capacitor start, or 3/60/230-460, TEFC
- Mounting: rigid mounting to fixed mixer mounting bracket, or portable mounting with mixer motor mounted to C clamp mounting bracket no. AA033.

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product Name:	Redux E50
Product Use:	Water and Wastewater Treatment Coagulant/Flocculant
Revision Date:	Apr 15, 2019
Supersedes Date:	Mar 5, 2015
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Dr. West Haven CT, 06516
Emergency Phone:	Chemtrec, (1) 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

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

Precautionary Statements - Response

Absorb spillage to prevent material damage.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
PROPRIETARY	Trade Secret Ingredient	45 - 55%

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

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

Keep container(s) tightly closed and properly labeled. Store in cool, dry, well-ventilated areas away from heat, direct sunlight and strong oxidizers. Store in approved containers and protect against physical damage. Keep containers securely sealed when not in use. Indoor storage should meet OSHA standards and appropriate fire codes. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous.

Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	11.10 lb/gal
Specific Gravity	1.33 - 1.35
Appearance	Colorless to yellow liquid
pH	3 - 4
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	complete
Viscosity	< 100cps @20C
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<19 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation LC50 : Not Available
Oral LD50 : Not Available
Dermal LD50 : Not Available

Acute Toxicity

Component	weight-%	Oral LD50	Dermal LD50	Inhalation LC50
Trade Secret Ingredient	45 - 55%	= 9187 mg/kg (Rat)	> 2000 mg/k (Rat)	--

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

Fish
LC 50 (96 hour, static) 776.4 mg/L *Pimephales promelas* (Fathead Minnow) [1]
EC 50 (96 hour, static) 265.5 mg/L *Pimephales promelas* (Fathead Minnow) [1]

Crustacea
LC 50 (48 hour, static) 803.8 mg/L *Ceriodaphnia dubia* (Water Flea) [1]
EC 50 (48 hour, static) 33.2 mg/L *Ceriodaphnia dubia* (Water Flea) [1]

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

Component	weight-%	Algae/aquatic plants	Fish	Toxicity to daphnia and other aquatic invertebrates
Trade Secret Ingredient	45 - 55%	--	LC50 (96 h static) 100 - 500 mg/L (Brachydanio rerio)	--

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

This product is excepted from DOT regulations under 49 CFR 173.154(d) when shipped by road or railway. The product exception is referenced in 49 CFR 172.101 Table. Packaging material must not be aluminum, steel or be degraded by this product

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

Additional Information

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

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

DISCLAIMER

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

SAFETY DATA SHEET

Revision date 2019-27-9

Revision number 2

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID:	FOC ND-9911
Product Name:	Waste/Water Treatment. For industrial use only
Revision Date:	Sep 27,2019
Supersedes Date:	April 28, 2019
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Drive West Haven, CT, US, 06516
Emergency Phone:	Chemtrec 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification

Eye Irritation - Category 2

Skin Irritation - Category 3

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes mild skin irritation

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

Precautionary Statements - Storage

No precautionary statement available.

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

Substances/Mixtures

Chemical nature: Anionic Polyacrylamide

This product is not classified as Hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

All of the product's ingredients are either listed or exempt from the TSCA Inventory.

Some specific chemical identity is being withheld as a trade secrets
None of the chemicals in this product are hazardous according to the GHS.

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	5.85 lb/gal
Specific Gravity	0.65 - 0.85
Appearance	Off white granular solid
pH	6.0 - 8.0
Odor Threshold	N/A
Odor Description	characteristic odor
Water Solubility	< 2%
Viscosity	N/A
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Flash point at or above 200°F/93°C

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation, ingestion, skin absorption.

Acute Toxicity

Acute Oral Toxicity: Results displayed may not be the result of actual testing of this material but based on a similar tested material
LD50, Rat, 4 hr > 2,500 mg/kg (estimated)
Acute Inhalation Toxicity: LC50, Rat, 4 hr, > 20mg/l (estimated)
Acute Dermal Toxicity: LD50, Rabbit, > 10,000 mg/kg (estimated)

Carcinogenicity

Based on available data, the classification criteria are not meet.

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes mild skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic Toxicity: Ecotoxicological information provided is based on a structurally or compositionally similar product.

LC50, Bluegill sunfish (Lepomis macrochirus), 96 hr, > 100 mg/kg	OECD Test Guideline 203
LC50, Rainbow Trout (Oncorhynchus mykiss), 96 hr, > 100 mg/l	OECD Test Guideline 203
EC50, Water Flea (Daphina Magna), 48 hr , > 100 mg/l	OECD Test Guideline 202
EC50, Amphipoda (Corophium Volutator), 10 d, 1415 mg/l	OECD Test Guideline 202
EC50, Copepod (Acartia Tonsa), 48 hr , 342 mg/l	OECD Test Guideline 202
IC50, Green Algae (Selenastrum capricornutum), 72 hr, > 100mg/l	OECD Test Guideline 201
IC50, Diatom (Skeletonema Costatum), 72 hr, 2,276 mg/l	OECD Test Guideline 201

Mobility in Soil

Water Solubility: Limited by viscosity.
Surface Tension: Not applicable

Persistence and degradability

Ecotoxicological information provided is based on a structurally or compositionally similar product.

Not Readily Biodegradable.

Ready Biodegradability: d:< 10%	OECD Test Guideline 301 D/28
Biodegradability in Seawater: d: 1.7%	OECD Test Guideline 306/28

Bioaccumulative potential

Bioaccumulation is unlikely. Because of the high molecular weight of the polymer diffusion through biological membranes is very small.

Partion coefficient

N-octanol/water: Not applicable

Other adverse effects

This material is not classified as dangerous for the environment .

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

For all transportation accidents, call CHEMTREC at 800/424-9300. All spills and leaks of this material must be handled in accordance with local, state, and federal regulations.

DOT Shipping Designation:

Non-hazardous under 29-CFR 1910.1200. Water treatment compound

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
No applicable CAS	No applicable chemical	-	-

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDGCanadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

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

DISCLAIMER

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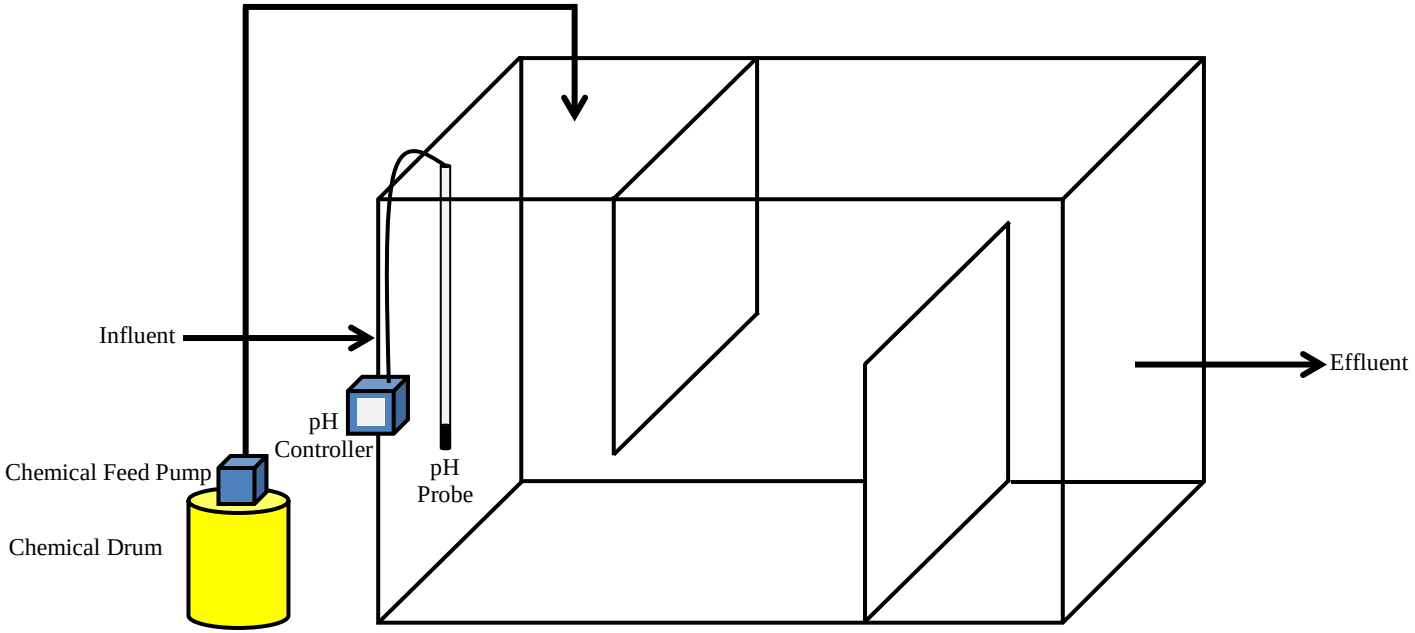


Notes:

1.) Figure is not to scale.
2.) System layout can vary with site conditions.

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

Configuration of pH Adjustment System

Lockwood Remediation Technologies, LLC

One Controller for the Broadest Range of Sensors.

Choose from 30 digital and analog sensor families for up to 17 di:erent parameters.

Maximum Versatility

The sc200 controller allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with Hach's broad range of sensors, eliminating the need for dedicated, parameter-specific controllers.

Ease of Use and Confidence in Results

Large, high-resolution, transreflective display provides optimal viewing resolution in any lighting condition. Guided calibration procedures in 19 languages minimize complexity and reduce operator error. Password-protected SD card reader o:ers a simple solution for data download and transfer. Visual warning system provides critical alerts.

Wide Variety of Communication Options

Utilize two to five analog outputs to transmit primary and secondary values for each sensor, or integrate Hach sensors and analyzers into MODBUS RS232/RS485, Profibus® DP, and HART networks.

Password protected SD card reader offers a simple solution for data download and transfer, and sc200 and digital sensor configuration file duplication and backup.

Controller Comparison

Features	Previous Models sc100™ Controller	Previous Models GLI53 Controller	sc200™ Controller	Benefits
Display	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.)	160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective	• Improved user interface—50% bigger • Easier to read in daylight and sunlight
Data Management	irDA Port/PDA Service Cable	N/A	SD Card Service Cable	• Simplifies data transfer • Standardized accessories/max compatibility
Sensor Inputs	2 Max Direct Digital Analog via External Gateway	2 Max Analog Depending on Parameter	2 Max Digital and/or Analog with Sensor Card	• Simplifies analog sensor connections • Works with analog and digital sensors
Analog Inputs	N/A	N/A	1 Analog Input Signal Analog 4-20mA Card	• Enables non-sc analyzer monitoring • Accepts mA signals from other analyzers for local display • Consolidates analog mA signals to a digital output
4-20 mA Outputs	2 Standard	2 Standard	2 Standard Optional 3 Additional	• Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input
Digital Communication	MODBUS RS232/RS485 Profibus DP V1.0	HART	MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2	• Unprecedented combination of sensor breadth and digital communication options

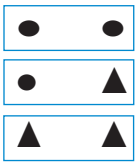
Choose from Hach's Broad Range of Digital and Analog Sensors

Parameter	Sensor	Digital or Analog
Ammonia	AMTAX™ sc, NH4D sc, AISE sc, AN-ISE sc	●
Chlorine	CLF10 sc, CLT10 sc, 9184 sc	●
Chlorine Dioxide	9185 sc	●
Conductivity	GLI 3400 Contacting, GLI 3700 Inductive	▲
Dissolved Oxygen	LDO® Model 2, 5740 sc	●
Dissolved Oxygen	5500	▲
Flow	U53, F53 Sensors	▲
Nitrate	NITRATAX™ sc, NO3D sc, NISE sc, AN-ISE sc	●
Oil in Water	FP360 sc	●
Organics	UVAS sc	●
Ozone	9187 sc	●
pH/ORP	pHD	●
pH/ORP	pHD, pH Combination, LCP	▲
Phosphate	PHOSPHAX™ sc	●
Sludge Level	SONATAX™ sc	●
Suspended Solids	SOLITAX™ sc, TSS sc	●
Turbidity	1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc, TSS sc	●
Ultra Pure Conductivity	8310, 8311, 8312, 8315, 8316, 8317 Contacting	▲
Ultra Pure pH/ORP	8362	▲

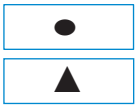
● = Digital ▲ = Analog

Connect up to two of any of the sensors listed above, in any combination, to meet your application needs. The diagrams below demonstrate the potential configurations. Operation of analog sensors requires the controller to be equipped with the appropriate sensor module. Contact Hach Technical Support for help with selecting the appropriate module.

2 Channel Configurations



1 Channel Configurations



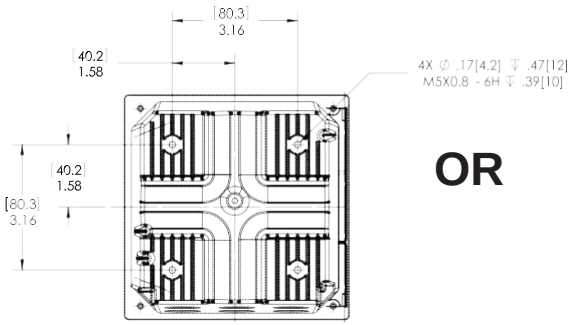
Specifications*

Dimensions (H x W x D)	5.7 in x 5.7 in x 7.1 in (144 mm x 144 mm x 181 mm)
Display	Graphic dot matrix LCD with LED backlighting, transreflective
Display Size	1.9 x 2.7 in. (48 mm x 68 mm)
Display Resolution	240 x 160 pixels
Weight	3.75 lbs. (1.70 kg)
Power Requirements (Voltage)	100 - 240 V AC, 24 V DC
Power Requirements (Hz)	50/60 Hz
Operating Temperature Range	-20 to 60 °C , 0 to 95% RH non-condensing
Analog Outputs	Two (Five with optional expansion module) to isolated current outputs, max 550 Ω , Accuracy: ± 0.1% of FS (20mA) at 25 °C, ± 0.5% of FS over -20 °C to 60 °C range Operational Mode: measurement or calculated value
Analog Output Functional Mode	Linear, Logarithmic, Bi-linear, PID
Security Levels	2 password-protected levels
Mounting Configurations	Wall, pole, and panel mounting
Enclosure Rating	NEMA 4X/IP66
Conduit Openings	1/2 in NPT Conduit
Relay: Operational Mode	Primary or secondary measurement, calculated value (dual channel only) or timer
Relay Functions	Scheduler (Timer), Alarm, Feeder Control, Event Control, Pulse Width Modulation, Frequency Control, and Warning
Relays	Four electromechanical SPDT (Form C) contacts, 1200 W, 5 A
Communication	MODBUS RS232/RS485, PROFIBUS DPV1, or HART 7.2 optional
Memory Backup	Flash memory
Electrical Certifications	EMC CE compliant for conducted and radiated emissions: - CISPR 11 (Class A limits) - EMC Immunity EN 61326-1 (Industrial limits) Safety cETLus safety mark for: - General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1 - Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors cULus safety mark - General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

**Subject to change without notice.*

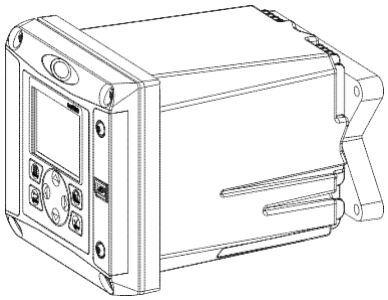
Dimensions

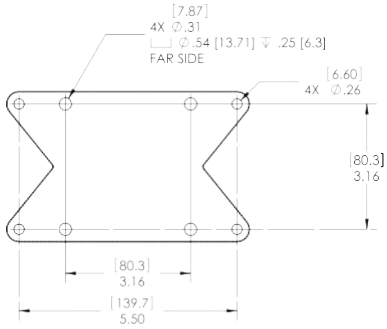
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

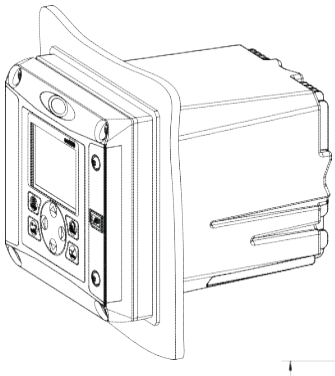
OR

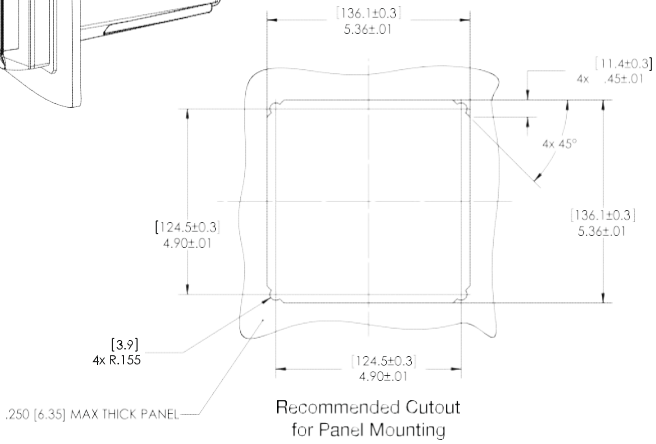




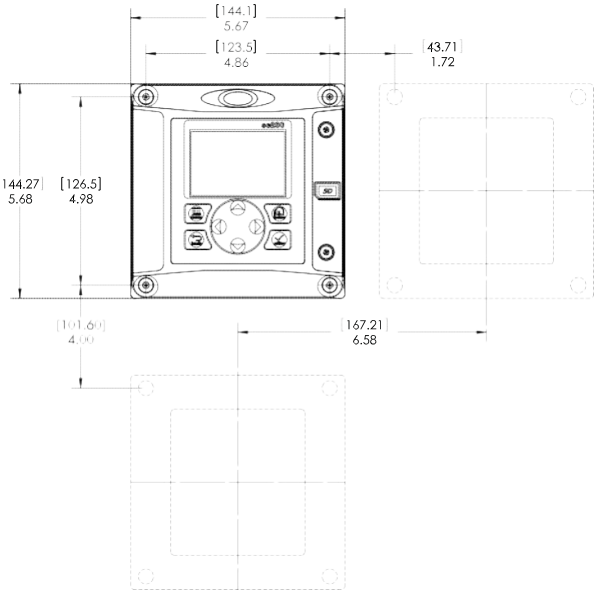
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield
p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



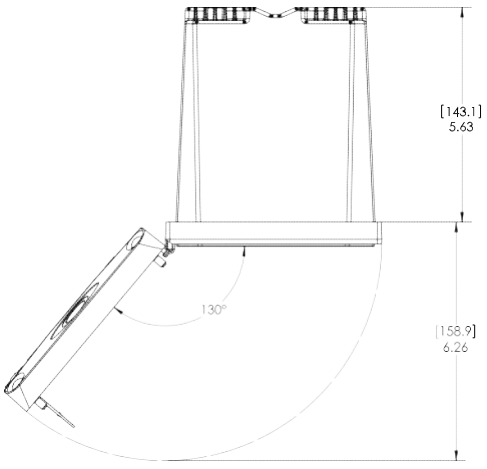


Recommended Cutout
for Panel Mounting

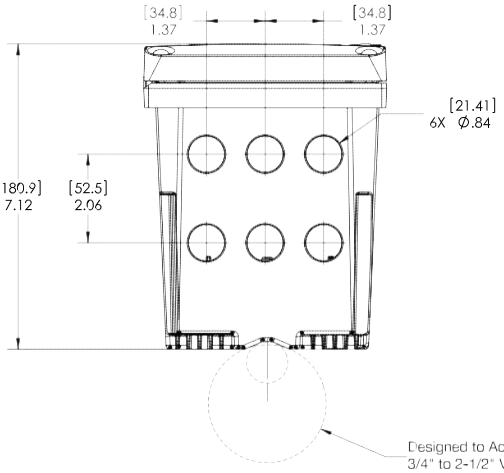


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



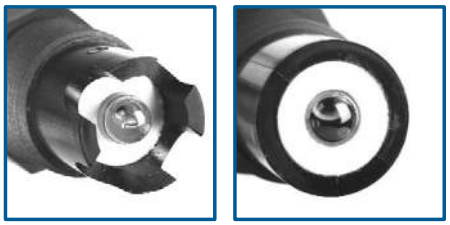
Door Opening Details



Designed to Accommodate
3/4" to 2-1/2" Vertical / Horizontal Pipe

3/4-inch Combination pH and ORP Sensor Kits

Use the Digital Gateway to make any Hach analog combination pH or ORP sensor compatible with the Hach sc1000 Controller.



Digital combination pH and ORP sensors are available in convertible, insertion, and sanitary mounting styles. Choose from rugged dome electrodes or "easy-to-clean" flat glass electrodes.

Features and Benefits

Low Price—High Performance

These combination sensors are designed for specialty applications for immersion or in-line mounting. The reference cell features a double-junction design for extended service life, and a built-in solution ground. The body is molded from chemically-resistant Ryton® or PVDF, and the reference junction is coaxial porous Teflon®. All sensors are rated 0 to 105ºC up to 100 psig, and have integral 4.5 m (15 ft.) cables with tinned leads. The PC-series (for pH) and RC-series (for ORP) combination sensors are ideal for measuring mild and aggressive media.

Special Electrode Configurations

Sensors with rugged dome electrodes, "easy-to-clean" flat glass electrodes, and even HF (hydrofluoric acid) resistant glass electrodes are available for a wide variety of process solutions.

Temperature Compensation Element Option

The PC-series combination pH sensors are available with or without a Pt 1000 ohm RTD temperature element. The RC-series combination ORP sensors are supplied without a temperature element.

Versatile Mounting Styles

Sensors are available in three mounting styles—convertible, insertion, and sanitary. Please turn to page 3 for more information.

Full-Featured "Plug and Play" Hach sc Digital Controllers

There are no complicated wiring or set up procedures with any Hach sc controller. Just plug in any combination of Hach digital sensors and it's ready to use—it's "plug and play."

One or multiple sensors—The sc controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications—Multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital MODBUS® (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

Data logger—A built-in data logger collects measurement data, calibration, verification points, and alarm history.

Specifications*

Most pH applications fall in the 2.5-12.5 pH range. General purpose pH glass electrodes perform well in this range. Some industrial applications require accurate measurements and control at pH values below 2 or above 12. Consult Hach Technical Support for details on these applications.

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable (plus two conductors for temperature compensator option); 4.5 m (15 ft.) long

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

Common materials for all sensor styles include PTFE Teflon double junction, glass process electrode, and Viton® O-rings

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

Temperature Range
0 to 105ºC (32 to 221ºF)

Flow Rate
0 to 2 m/s (0 to 6.6 ft./s); non-abrasive

Pressure Range
0 to 6.9 bar at 100ºC (0 to 100 psig at 212ºF)

Signal Transmission Distance
100 m (328 ft.) when used with the Hach Digital Gateway and a Hach sc Digital Controller.

1000 m (3280 ft.) when used with the Hach Digital Gateway, Termination Box, and a Hach sc Digital Controller.

Sensor Cable
Integral coaxial cable; 4.5 m (15 ft.) long; terminated with stripped and tinned wires

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Common materials for all sensor styles include PTFE Teflon double junction, glass with platinum process electrode, and Viton® O-rings

Warranty
90 days

**Specifications subject to change without notice.*

Engineering Specifications

1. The pH sensor shall be available in convertible, insertion or sanitary styles. The ORP sensor shall be available in only convertible or insertion styles.
2. The convertible style sensor shall have a Ryton® body. The insertion style sensor shall have a PVDF body. The sanitary style sensor shall have a 316 stainless steel sleeved PVDF body. Common materials for all sensor styles shall include a PTFE Teflon® double junction, and Viton® O-rings. The pH sensor shall have a glass pH electrode. The ORP sensor shall have a platinum ORP electrode.
3. The convertible style pH sensor shall be available with or without a built-in Pt 1000 ohm RTD temperature element. Insertion and sanitary style pH sensors shall have a built-in Pt 1000 ohm RTD temperature element. Convertible and insertion style ORP sensors shall not have a built-in temperature element.
4. The sensor shall communicate via MODBUS® RS-485 to a Hach sc Digital Controller.
5. The sensor shall be Hach Company Model PC sc or PC-series for pH measurement or Model PC sc or RC-series for ORP measurement.

Dimensions

Convertible Style Sensor

The convertible style sensor has a Ryton® body that features 3/4-inch NPT threads on both ends. The sensor can be directly mounted into a standard 3/4-inch pipe tee for flow-through mounting or fastened onto the end of a pipe for immersion mounting. The convertible style sensor enables inventory consolidation, thereby reducing associated costs. Mounting tees and immersion mounting hardware are offered in a variety of materials to suit application requirements.

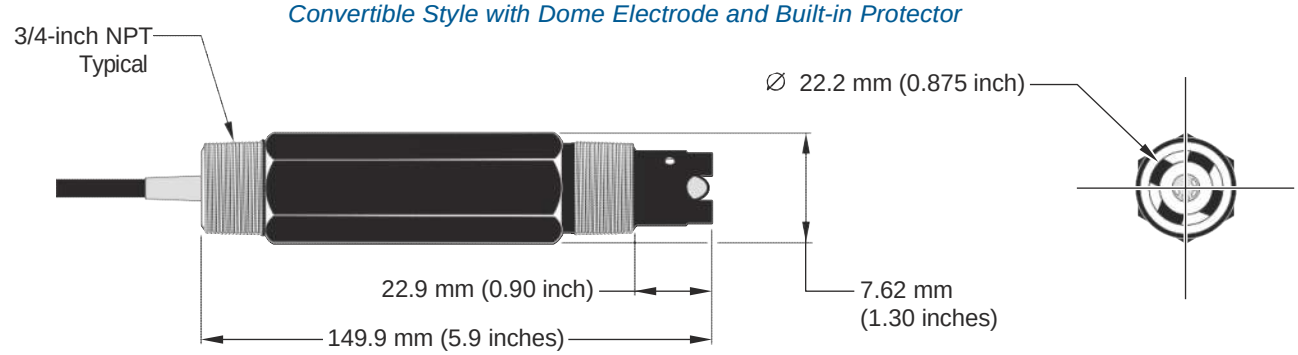
Insertion Style Sensor

Insertion style sensors feature a longer, non-threaded PVDF body with two Viton® O-rings, providing a seal when used with the optional Hach insertion mount hardware assembly. This ball valve hardware enables sensor insertion and retraction from a pipe or vessel without having to stop the process flow.

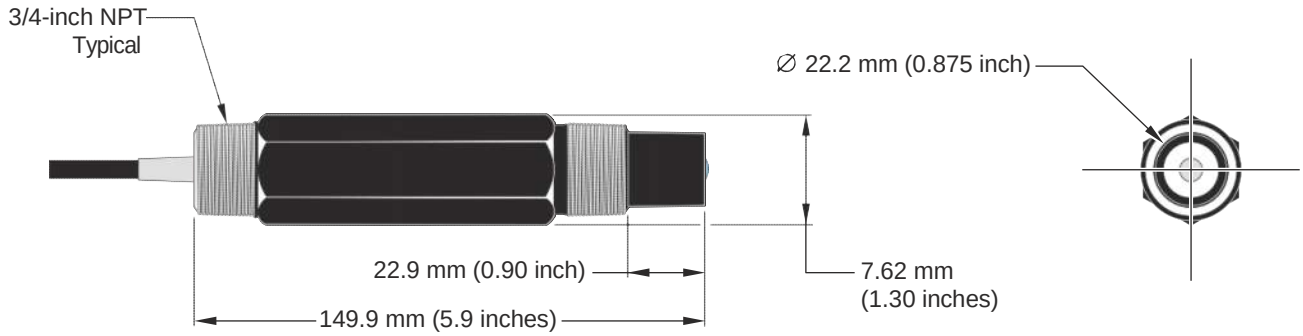
Sanitary Style Sensor

The sanitary style sensor, offered for pH measurement, has a 316 stainless steel-sleeved PVDF body with a 2-inch flange. The sensor mates to a standard 2-inch Tri-Clover fitting. The optional Hach sanitary mounting hardware includes a standard 2-inch sanitary tee, sanitary clamp, and Viton® sanitary gasket.

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



Lockwood Remediation Technologies, LLC

The Pulsatron Series A Plus offers manual function controls over stroke length and stroke rate as standard with the option to select external pace for automatic control.

Ten distinct models are available, having pressure capabilities to 250 PSIG (17 BAR) @ 12 GPO (1.9 lph), and flow capacities to 58 GPO (9.1 lph) @ 100 PSIG (7.0 BAR), with a standard turndown ratio of 100:1, and optional ratio of 1000:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Features

- Manual Control by on-line adjustable stroke rate and stroke length.
- Highly Reliable timing circuit.
- Circuit Protection against voltage and current upsets.
- Solenoid Protection by thermal overload with auto-reset.
- Water Resistant, for outdoor and indoor applications.
- Internally Dampened To Reduce Noise.
- Guided Ball Check Valve Systems, to reduce back flow and enhance outstanding priming characteristics.
- Few Moving Parts and Wall Mountable.
- Safe & Easy Priming with durable leak-free bleed valve assembly (standard).
- Optional Control: External pace with auto/manual selection.

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

Controls Options		
Feature	Standard Configuration	Optional Configuration [1]
External Pacing	--	Auto / Manual Selection
External Pace w/ Stop (125 SPM only)	--	Auto / Manual Selection [2]
Manual Stroke Rate	10:1 Ratio	100:1 Raio
Manual Stroke Length	10:1 Ratio	10:1 Ratio
Total Turndown Ratio	100:1 Ratio	1000:1 Ratio

Note 1: On S2, S3 & S4 sizes only.

Note 2: Not available on 1000:1 turndown pumps.

Operating Benefits

- Reliable metering performance.
- Rated "hot" for continuous duty.
- High viscosity capability.
- Leak-free, sealless, liquid end.

Aftermarket

- KOPkits
- Gauges
- Dampeners
- Pressure Relief Valves
- Tanks
- Pre-Engineered Systems
- Process Controllers (PULSAblue, MicroVision)

Series A Plus
Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <;N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1.14'ID X 3.18' OD						3.18'D X 1.12' OD	1.14'D X 3.18' OD		
		Pioina	1.14'FNPT									
Strokes/Minute		SPM	125							250		

Note 3: Pumps with rated pressure above 150 PSI will be de-rated to 150 PSI Max. when selecting certain valve options, see Price Book for details.

Engineering Data

Pump Head Materials Available:	GFPPL
	PVC
	PVDF
	316 SS
Diaphragm:	PTFE-faced CSPE-backed
Check Valves Materials Available:	
Seats/0-Rings:	PTFE
	CSPE
	Viton
Balls:	Ceramic
	PTFE
	316 SS
	Alloy C
Fittings Materials Available:	GFPPL
	PVC
	PVDF
Bleed Valve:	Same as fitting and check valve selected, except 316SS
Injection Valve & Foot Valve Assy:	Same as fitting and check valve selected
Tubing:	Clear PVC
	White PE

Important: Material Code - GFPPL=Glass-filled Polypropylene, PVC=Polyvinyl Chloride, PE=Polyethylene, PVDF=Polyvinylidene Fluoride, CSPE=Generic formulation of Hypalon, a registered trademark of E.I. DuPont Company. Viton is a registered trademark of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Engineering Data

Reproducibility:	+/- 3% at maximum capacty
Viscosity Max CPS:	1000 CPS
Stroke Frequency Max SPM:	125 / 250 by Model
Stroke Frequency Turn-Down Ratio:	10:1 / 100:1 by Model
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	0.6 Amps
@ 230 VAC; Amps:	0.3 Amps
Peak hput Power:	130 Watts
Average Input Power @ Max SPM:	50 Watts

Custom Engineered Designs - Pre-Engineered Systems

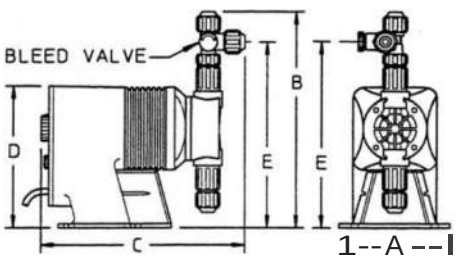
Pre-Engineered Systems

Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key simplicity and industrial-grade durability. The UV-stabilized, high-grade HOPE frame offers maximum chemical compatibility and structural rigidity. Each system is factory assembled and hydrostatically tested prior to shipment.

Dimensions

Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02 IS2	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03 IS3	5.0	9.9	9.5	6.5	8.5	10
LB0B4	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 cm



95-Gallon OverPack - 32" dia x 41.5", 1 each/package

Stock a SpillTech® OverPack with sorbents for emergency spill response, or use it as a salvage drum to ship damaged containers or hazardous waste.

- DOT-Approved for Salvage: All SpillTech® OverPacks are DOT-approved and X-rated for use as salvage drums. Helps companies conform to federal regulations when shipping damaged or leaking containers of hazardous materials, or absorbents contaminated with hazardous substances.
- Perfect for Spill Kits: Stores sorbent products (not included) for easy access as needed for spill control. Saves time when quick response is necessary.
- Sturdy Construction: 100% polyethylene OverPack resists chemicals, rust and corrosion for years of use. Integrated handles make them easy to lift, move or carry with standard material handling equipment. Twist-on, double-wall lid with closed-cell gasket provides sealed, secure closure to prevent leaks and protect contents from moisture, dirt and damage. Durable to withstand rough handling.
- Customized for You: We can customize a Spill Kit to your exact specifications, including the container, its contents and accessories, with no upcharge! Contact your local Distributor for details.

A95OVER Specifications

Dimensions:	ext. dia. 32" x 41.5" H
Shipping Dimensions:	31.75" W x 41.5" L x 31.75" H
Sold as:	1 per package
Color:	Yellow
Composition:	Polyethylene
# per Pallet:	3
Incinerable:	No
Ship Class:	250

Metric Equivalent Specifications

Dimensions:	ext. dia. 81.3cm x 105.4cm H
Shipping Dimensions:	80.6cm W x 105.4cm L x 80.6cm H

A95OVER Technical Information

Warnings & Restrictions:
There are no known warnings and restrictions for this product.

Regulations and Compliance:
49 CFR 173.3(c)(1) - If a container of hazardous waste is damaged or leaking, it can be placed in a compatible salvage drum that meets UN criteria for shipping

49 CFR 173.12(b)(2)(iv) - When labpacking, "Inner packagings…must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents."

49 CFR 173.12(b) - A container used for labpacking must be "a UN 1A2 or UN 1B2 metal drum, a UN 1D plywood drum, a UN 1G fiber drum or a UN 1H2 plastic drum tested and marked at least for the Packing Group III performance level for liquids or solids."

SAFETY DATA SHEET

M32415 - ANSI - EN

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415 **SDS Revision Date:** 13-Jan-2016

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700 (55) 55959542 (Mexico)
Product Identifier:	**CAUSTIC SODA LIQUID (ALL GRADES)**
Trade Name:	Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%, Caustic Soda Membrane 6%, 18%, 20%, 25%, 30%, 48%, 50%, 50% Caustic Soda Membrane OS, 50% Caustic Soda Diaphragm OS, Caustic Soda Low Salt 50%, Membrane Blended, 50% Caustic Soda Diaphragm (West Coast), Membrane Cell Liquor
Synonyms:	Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids
Product Use:	Metal finishing, Cleaner, Process chemical, Petroleum Industry
Uses Advised Against:	None identified

SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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EMERGENCY OVERVIEW:

Color: Colorless to slightly colored
Physical State: Liquid
Appearance: Clear to opaque
Odor: Odorless

Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES SERIOUS EYE DAMAGE. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE. MAY CAUSE RESPIRATORY IRRITATION. EFFECTS OF CONTACT OR INHALATION MAY BE DELAYED.

PHYSICAL HAZARDS: MAY BE CORROSIVE TO METALS. Mixing with water, acid or incompatible materials may cause splattering and release of heat. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated.

ECOLOGICAL HAZARDS: This material has exhibited moderate toxicity to aquatic organisms. Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Wear eye protection, face protection, protective gloves. Do not breathe mist, vapors, or spray. Do not ingest. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling- exposure can cause burns which are not immediately painful or visible.

ADDITIONAL HAZARD INFORMATION: This material is corrosive. It may cause severe burns and permanent damage to any tissue with which it comes into contact. Toxicity may be delayed, and may not be readily visible. To treat contacted tissue, flush with water to dilute. There is no specific antidote. Significant exposures must be referred for medical attention immediately.

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GHS CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Corrosive to Metals Mixing with water may cause splattering and release of heat
GHS: CONTACT HAZARD - SKIN:	Category 1B - Causes severe skin burns and eye damage.
GHS: CONTACT HAZARD - EYE:	Category 1 - Causes serious eye damage

GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 3 - May cause respiratory irritation
GHS: CARCINOGENICITY:	Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC or OSHA.
GHS: HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD:	Category 3 - Harmful to aquatic life

UNKNOWN ACUTE TOXICITY: 100% of the mixture consists of ingredient(s) of unknown toxicity. There is no acute toxicity data available for this product.

GHS SYMBOL: Corrosive

GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)
• May be corrosive to metals

GHS - Health Hazard Statement(s)
• Causes serious eye damage
• Causes severe skin burns and eye damage
• May cause respiratory irritation

GHS - Precautionary Statement(s) - Prevention
• Do not breathe mist, vapors, or spray
• Wear protective gloves, protective clothing, eye, and face protection
• Wash thoroughly after handling
• Keep only in original container
• Use only outdoors or in a well-ventilated area

GHS - Precautionary Statement(s) - Response
• IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower
• Wash contaminated clothing before reuse
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• Immediately call a POISON CENTER or doctor/physician
• IF INHALED: Remove person to fresh air and keep comfortable for breathing
• Immediately call a POISON CENTER or doctor/physician
• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
• Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
• Absorb spillage to prevent material damage

GHS - Precautionary Statement(s) - Storage
• Store locked up
• Store in a well-ventilated place. Keep container tightly closed
• Store in corrosive resistant and NON-ALUMINUM container with a resistant inner liner (NOTE: flammable hydrogen gas may be generated if aluminum container and/or aluminum fittings are used)

GHS - Precautionary Statement(s) - Disposal
• Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Hazards Not Otherwise Classified (HNOC)
Mixing with water may cause splattering and release of heat

Additional Hazard Information
Mixing with water may cause splattering and release of heat.

See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids

Component	Percent [%]	CAS Number
Water	48.5 - 94.5	7732-18-5
Sodium Hydroxide	5.5 - 51.5	1310-73-2
Sodium Chloride	0 - 35	7647-14-5

Notes: *All hazardous and non-hazardous components of product composition are listed.*

SECTION 4. FIRST AID MEASURES

INHALATION: If inhalation of mists, vapors, or spray occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. There is no specific antidote, treat symptomatically.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with large amounts of water. GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY. Washing eyes within several seconds is essential to achieve maximum effectiveness.

INGESTION: If swallowed, do not induce vomiting. For definite or probable ingestion, do not administer oral fluids. If vomiting occurs spontaneously, keep airway clear. Monitor airway. Volume resuscitation (IV fluids) and circulatory support (CPR) may be required. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Most Important Symptoms/Effects (Acute and Delayed) Corrosive. This material may be corrosive to any tissue it comes in contact with. It can cause serious burns and extensive tissue destruction resulting in: liquefaction, necrosis, and/or perforation.

Acute Symptoms/Effects: Listed below.
Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.
Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).
Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.
Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

Delayed Symptoms/Effects:
- Skin: Repeated and prolonged skin contact may cause a chronic dermatitis

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as: eye disorders that decrease tear production or have reduced integrity of the eye; skin disorders that compromise the integrity of the skin; and respiratory conditions including asthma and other breathing disorders.

Protection of First-Aiders: Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Do not ingest. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

Notes to Physician: Medical observation and assessment is recommended for all ingestions, all eye exposures, and symptomatic inhalation and dermal exposures. For symptomatic ingestion, do not administer oral fluids and consider investigation by endoscopy, X-ray, or CT scan. Esophageal perforation, airway compromise, hypotension, and shock are possible. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Surgical intervention may be required.

SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. May react with chemically reactive metals such as aluminum, zinc, magnesium, copper, etc. to release hydrogen gas which can form explosive mixtures in air.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire.

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Do not apply water directly on this product. Heat is generated when mixed with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Avoid contact with skin.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide 1310-73-2	10 mg/m^3 IDLH

Hazardous Combustion Products: Sodium hydroxide fumes can be generated by thermal decomposition at elevated temperatures

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not applicable

GHS: PHYSICAL HAZARDS:
- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Do not get in eyes, on skin or on clothing. Avoid breathing mist, vapor, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8 of the SDS.

Methods and Materials for Containment and Cleaning Up:
In case of spill or leak, stop the leak as soon as possible, if safe to do so. Completely contain spilled materials with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate.

Environmental Precautions:
Keep out of water supplies and sewers. Do not flush into surface water or sanitary sewer system. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling:
Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not ingest. Do not eat, drink or smoke in areas where this material is used. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. NEVER add water to product. When mixing, slowly add to water to minimize heat generation and spattering.

Safe Storage Conditions:
Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys, Releases heat when diluted in water

GHS: PHYSICAL HAZARDS:
- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational exposure limits (OEL's).

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PELCeiling
Sodium Hydroxide 1310-73-2	2 mg/m^3	-----	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have non-regulatory occupational exposure limits (OEL's).

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Sodium Hydroxide	-----	-----	2 mg/m^3	-----	-----	2 mg/m^3

- The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

Component	OXY REL 8 hr TWA	OXY REL STEL	OXY REL Ceiling
Sodium Chloride 7647-14-5 (0 - 35)	-----	-----	-----

ENGINEERING CONTROLS: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles with a face-shield to protect against eye and skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear protective clothing to minimize skin contact. Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Always place pants legs over boots. Contaminated clothing should be removed, then discarded or laundered. Discard contaminated leather goods.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types:
- Natural rubber
- Neoprene
- Nitrile
- Polyvinyl chloride (PVC)
- Tyvek®
- Tychem®

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide 1310-73-2	10 mg/m^3 IDLH

HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety practices. Wash hands and affected skin immediately after handling, before breaks, and at the end of the workday. When using do not eat or drink. When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear to opaque
Color:	Colorless to slightly colored
Odor:	Odorless
Odor Threshold [ppm]:	No data available.
Molecular Weight:	40.01
Molecular Formula:	NaOH
Decomposition Temperature:	No data available
Boiling Point/Range:	215 - 291°F (102 - 144°C)
Freezing Point/Range:	-26 to 59°F (-32 to 15 °C).
Vapor Pressure:	13 - 135 mmHg @ 60 °C
Vapor Density (air=1):	No data available
Relative Density/Specific Gravity (water=1):	1.05 – 1.56 @ 15.6 °C
Density:	8.8 - 13.0 lbs/gal @ 15.6 °C
Water Solubility:	100%
pH:	14.0 (theoretical value of 7.5% solution)
Volatility:	No data available
Evaporation Rate (ether=1):	No data available
Partition Coefficient (n-octanol/water):	No data available
Flash point:	Not flammable
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Auto-ignition Temperature:	Not applicable
Viscosity:	About 24cp for 50% solution at 40 °C (104 °F)

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Soluble in water, releasing heat sufficient to ignite combustibles. Reacts with metals, and may form hydrogen gas.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions:
Mixing with water, acid, or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

Conditions to Avoid: (e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid: Acids and halogenated compounds. Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys. Releases heat when diluted in water.

Hazardous Decomposition Products: Toxic fumes of sodium oxide

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

IRRITATION DATA: PRIMARY SKIN IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)
PRIMARY EYE IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

TOXICITY DATA:

PRODUCT TOXICITY DATA: CAUSTIC SODA LIQUID (ALL GRADES)

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
No reliable data available	No reliable data available	No data available

COMPONENT TOXICITY DATA:
Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
Water 7732-18-5	90 mL/kg (Rat)	-----	-----
Sodium Hydroxide 1310-73-2	140-3400 mg/kg	1350 mg/kg (Rabbit)	-----
Sodium Chloride 7647-14-5	3 g/kg (Rat)	-----	42 g/m^3 (1 hr-Rat)

****

POTENTIAL HEALTH EFFECTS:

Eye contact: Corrosive. Causes serious eye damage which can result in: severe irritation, pain and burns, and permanent damage including blindness.

Skin contact: Corrosive. Causes severe skin burns. Prolonged or repeat skin exposures can result in dermatitis.

Inhalation: Corrosive. Inhalation injury may result from ingestion and/or aspiration of this material. May cause severe irritation of the respiratory tract with potential airway compromise, coughing, choking, pain, and burns of the mucous membrane and respiratory system. This material can be extremely destructive to the tissue of the mucus membranes and respiratory system. Aspiration may cause chemical pneumonitis, pulmonary edema, damage to lung tissue, death.

Ingestion: Corrosive. If swallowed, may cause severe oral and esophageal, mucus membrane, and gastrointestinal burns and possible perforation. If swallowed, may pose a lung aspiration hazard during vomiting.

Chronic Effects: Repeated or prolonged skin contact may result in dermatitis.

SIGNS AND SYMPTOMS OF EXPOSURE:
This material may cause severe burns and permanent damage to any tissue with which it comes into contact. It can cause serious burns and extensive tissue destruction resulting in liquefaction, necrosis and/or perforation. Signs and symptoms of exposure vary, and are dependent on the route of exposure, degree of exposure, and duration of exposure.

Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.
Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).
Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.
Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

TOXICITY:
When in solution, this material will affect all tissues with which it comes in contact. The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucus membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

****

GHS HEALTH HAZARDS:

GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage

GHS: CONTACT HAZARD - SKIN: Category 1B - Causes severe skin burns and eye damage

Skin Absorbent / Dermal Route? No.

GHS: CARCINOGENICITY:
Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC or OSHA.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 3 - Respiratory Irritation

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Aquatic Toxicity:
This material has exhibited moderate toxicity to aquatic organisms. Data provided are for sodium hydroxide

Component	Freshwater Fish	Invertebrate Toxicity:	Algae Toxicity:	Other Toxicity:
Sodium Chloride 7647-14-5 (0 - 35)		340.7 - 469.2 mg/L EC50 = 1000 mg/L EC50	-----	

FATE AND TRANSPORT:

BIODEGRADATION: This material is inorganic and not subject to biodegradation

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity This material is believed to exist in the disassociated state in the environment

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

BIOACCUMULATIVE POTENTIAL: Does not bioaccumulate.

MOBILITY IN SOIL: No data available.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms. This material has exhibited moderate toxicity to aquatic organisms.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.

Container Management:
Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium Hydroxide Solution
HAZARD CLASS/ DIVISION: 8

PACKING GROUP: II
LABELING REQUIREMENTS: 8
RQ (lbs): RQ 1000 lbs. (Sodium Hydroxide)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1824
SHIPPING NAME: Sodium hydroxide solution
CLASS OR DIVISION: 8
PACKING/RISK GROUP: II
LABELING REQUIREMENTS: 8

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium hydroxide solution
HAZARD CLASS / DIVISION: 8
Packing Group: II
LABELING REQUIREMENTS: 8

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	CERCLA Reportable Quantities:
Sodium Hydroxide	1000 lb (final RQ)

SARA EHS Chemical (40 CFR 355.30)
No components are listed

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Acute Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):
No components are listed

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):
No components in this material are regulated under DHS

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated

FDA: This material has Generally Recognized as Safe (GRAS) status under specific FDA regulations. Additional information is available from the Code of Federal Regulations which is accessible on the FDA's website. This product is not produced under all current Good Manufacturing Practices (cGMP) requirements as defined by the Food and Drug Administration (FDA).

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt

Component	U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):
Water 7732-18-5 (48.5 - 94.5)	Listed
Sodium Hydroxide 1310-73-2 (5.5 - 51.5)	Listed
Sodium Chloride 7647-14-5 (0 - 35)	Listed

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

STATE REGULATIONS

California Proposition 65:
This product and its ingredients are not listed, but it may contain impurities/trace elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact OxyChem Technical Services at 1-800-733-1165.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Sodium Hydroxide 1310-73-2	Not Listed	Not Listed	Not Listed	Listed	1706	corrosive

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Water 7732-18-5	Not Listed	Listed	Not Listed	Not Listed	Not Listed
Sodium Hydroxide 1310-73-2	Not Listed	Listed	Not Listed	Present	Listed

CANADIAN REGULATIONS

• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

Component	Water
WHMIS - Classifications of Substances: Uncontrolled product according to WHMIS classification criteria	
Component	Sodium Hydroxide
WHMIS - Classifications of Substances: E	
Component	Sodium Chloride
WHMIS - Classifications of Substances: Uncontrolled product according to WHMIS classification criteria	

SECTION 16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 13-Jan-2016

Other information:
The Safety Data Sheet for Caustic Soda Liquid (ALL Grades) can be used for hazard communication purposes for off-specification, secondary caustic soda liquids generated when cleaning caustic soda storage tanks, including the general disclaimer found in section 16 of the Safety Data Sheet

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health Rating: 3 **Flammability Rating:** 0 **Reactivity Rating:** 1

NFPA 704 - Hazard Identification Ratings (SCALE 0-4) : Listed below.

Health Rating: 3 **Flammability:** 0 **Reactivity Rating:** 1

Reason for Revision:
• Changed GHS Classification: SEE SECTION 2
• Toxicological Information has been revised: SEE SECTION 11

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415 **SDS Revision Date:** 13-Jan-2016

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and OxyChem assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

APPENDIX F

FEDERAL CORRESPONDENCE

From: Roosevelt Mesa - NOAA Affiliate
To: Shannon LaMarre
Subject: Re: Information for RGP
Date: Thursday, September 9, 2021 11:44:21 AM

Good afternoon Shannon,
Thank you for reaching out to our Section 7 team regarding the proposed project.

A good starting point for you to determine the potential presence of ESA-listed species under our jurisdiction in your action area is our Section 7 Mapper. Based on the location of the project, I would say that the presence of listed species under our jurisdiction would not be expected and a "no effect" determination might be appropriate in this case. There are a few scenarios where we advise a federal action agency that a no-effect determination might be appropriate. However, it is ultimately the responsibility of the federal action agency to make that call. The scenarios are:

1) No species/critical habitat present.
2) No species/critical habitat present *when* (e.g., time of year restrictions applied to the in-water work) the in-water work is occurring (and no permanent impacts to their habitat).
3) Species/critical habitat may be present, but there's no plausible route to affect.

In this case, you'd be looking at number 1. As mentioned above, we would not expect ESA-listed species to be present in the action area. Also, there is no designated critical habitat in or nearby the action area.

You can find additional resources and general information on No Effect Determinations at the following link:
https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-no-effect-determinations-greater-atlantic-region

Feel free to reach out with any additional questions or concerns.

Best regards,
Roosevelt

On Thu, Sep 9, 2021 at 8:38 AM NMFS.GAR ESA.Section7 - NOAA Service Account <nmfs.gar.esa.section7@noaa.gov> wrote:

> ---------- Forwarded message ---------
> From: **Shannon LaMarre** <slamarre@sanbornhead.com>
> Date: Wed, Sep 8, 2021 at 10:54 PM
> Subject: Information for RGP
> To: nmfs.gar.esa.section7@noaa.gov <nmfs.gar.esa.section7@noaa.gov>
>
> Good afternoon,

I am writing to request information to be included as part of a Notice of Intent (NOI) for a Remediation General Permit

(RGP). The NOI is for construction dewatering during excavation activities at 77 Massachusetts, Ave in Cambridge, MA, 02142.

Effluent will be discharged to the Charles River in Cambridge, MA by means of the existing storm drain located adjacent

to the site on MIT's campus (approximately 42°21'38.3"N 71°05'22.1"W).

Approximate Location of Discharge to the Charles River:

Lat: 42°23'40.1"N Long: 71°02'59.1"W

As part of the application to the USEPA for the RGP, we need to determine if this proposed temporary discharge has

the potential to adversely affect any federally listed species in the reach of the Charles River downstream of the

discharge point. Attached is the species list requested from the USFWS, which identified no

threatened/endangered/candidate species or critical habitats in the area.

Please let me know if you require any further information.

Thank you,

Shannon LaMarre, EIT
Senior Project Engineer

EIT in MA

SANBORN | HEAD & ASSOCIATES, INC.

D 857.327.9749 | 98 N. Washington Street, Suite 101, Boston, MA 02114

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Roosevelt Mesa *(he/him/his)*
Environmental Specialist
Integrated Statistics, Inc. | In support of NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Protected Resources Division
Email: roosevelt.mesa@noaa.gov

Search by address or coordinate

Bunker Hill CC Athletic Fields
Bunker Hill Community College
CHA Cambridge Hospital
Joan Lorentz Park
Mid-Cambridge
Gold Star Mothers Park
Wellington-Harrington
Donnelly Field
Lechmere Canal Park
Ahern Field
Sennott Park
Riverside
Cambridge
Cambridgeside
Rogers Street Park
The Port
East Cambridge
Front Park
Middlesex
Suffolk
Hoyt Field
Dana Park
Massachusetts Institute of Tech
Charles River
Cambridgeport
Area 2/MIT
Middlesex
Suffolk
Boston University
Back Bay
Mason Square
Fenway Park Field
Prudential Center
Copley Place
Christian
Massachusetts General Hospital
Beacon Hill
State House
Boston Common
Public Garden
Tufts Medical Center
Thoreau Path
TD Garden
Galvin Green
Paul Revere Park
North Point Park
Charlestown
Boston National Historical Park
Charlestown Naval Shipyard Park
City Hall Plaza
Quincy Market
Boston
Long Wharf
Boston Harbor
Puopolo Playground
US Coast Guard Station-Boston
LoPresti Park
Lewis Mall
Massport-East Boston Piers
East Boston Piers Park
Jeffries Point
Fan Pier Plaza
Fort Point Channel

0.2mi
-71.092 42.377 Degrees

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: September 08, 2021
Consultation Code: 05E1NE00-2021-SLI-4687
Event Code: 05E1NE00-2021-E-14376
Project Name: MIT Building 55

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2021-SLI-4687
Event Code: Some(05E1NE00-2021-E-14376)
Project Name: MIT Building 55
Project Type: DEVELOPMENT
Project Description: The Site is located on MIT's main campus in Cambridge, Massachusetts. The Site refers to the vicinity around the existing Building 54 and the proposed Building 55. The project includes a two-story addition to the north of the existing Building 54 structure, identified as Building 55. The footprint of the proposed Building 55 is approximately 3,500 square feet (SF), and the finished floor elevation for is intended to match the existing ground floor of Building 54 at approximately El. 23 feet and no basement space is proposed. Additionally, as part of the redevelopment landscape and subsurface utility improvements are proposed in the vicinity of Building 54 and Building 55, includes an approximately 3,500 SF rain garden to the north of the Building 55. Groundwater that flows into the excavations during construction activities that requires dewatering and cannot be discharged back into the ground will be treated prior to discharge to an existing storm drain that ultimately drains to the Charles River.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.36038915,-71.08934394336592,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

APPENDIX G

NATIONAL REGISTER OF HISTORICAL PLACES, CAMBRIDGE, MASSACHUSETTS

Appendix G
National Register of Historic Places
Cambridge, MA

Ref#	Property Name	State	County	City	Street & Number	Restricted Address	Listed Date	Area of Significance	Category of Property	Level of Significance - Local	Level of Significance - State	Level of Significance - National	Level of Significance - International	Level of Significance - Not Indicated	Name of Multiple Property Listing	Other Names	orig Ref#	Request Type	External Link	Status
79000354	Abbot, Edwin, House	MASSACHUSETTS	Middlesex	Cambridge	1 Follen St.	FALSE	5/10/1979	ARCHITECTURE	BUILDING	True	False	False	False	False		Longy School of Music	79000354	Single	https://catalog.archives.gov/id/63796017	Listed
82001883	Aborn, John, House	MASSACHUSETTS	Middlesex	Cambridge	41 Orchard St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001883	Multiple	https://catalog.archives.gov/id/63790460	Listed
04000249	Alewife Brook Parkway	MASSACHUSETTS	Middlesex	Cambridge	Alewife Brook Parkway	FALSE	3/18/2004	CONSERVATION; COMMUNITY PLANNING AND DEVELOPMENT; ENGINEERING; LANDSCAPE ARCHITECTURE; TRANSPORTATION	DISTRICT	False	True	False	False	False	Metropolitan Park System of Greater Boston MPS		04000249	Multiple	https://catalog.archives.gov/id/63792038	Listed
82001908	Almshouse	MASSACHUSETTS	Middlesex	Cambridge	41 Orchard St.	FALSE	4/13/1982	ARCHITECTURE; SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA		82001908	Multiple	https://catalog.archives.gov/id/63790590	Listed
82001906	American Net and Twine Company Factory	MASSACHUSETTS	Middlesex	Cambridge	155 2nd St.	FALSE	4/1/1982	INDUSTRY; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001906	Multiple	https://catalog.archives.gov/id/63790598	Listed
82001916	Ash Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Ash St. and Ash St. Place between Brattle and Mount Auburn Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001916	Multiple	https://catalog.archives.gov/id/63790964	Listed
82001917	Athenaeum Press	MASSACHUSETTS	Middlesex	Cambridge	215 1st St.	FALSE	4/13/1982	INDUSTRY; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA	Cuneo Press	82001917	Multiple	https://catalog.archives.gov/id/63790492	Listed
83000781	Atwood, Ephraim, House	MASSACHUSETTS	Middlesex	Cambridge	110 Hancock St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000781	Multiple	https://catalog.archives.gov/id/63790452	Listed
72000128	Austin Hall	MASSACHUSETTS	Middlesex	Cambridge	Harvard University campus	FALSE	4/19/1972	ARCHITECTURE	BUILDING	False	False	True	False	False			72000128	Single	https://catalog.archives.gov/id/63795879	Listed
83000782	Avon Hill Historic District	MASSACHUSETTS	Middlesex	Cambridge	Washington and Walnut Aves. and Agassiz, Humboldt, Arlington and Lancaster Sts.	FALSE	6/30/1983	ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA		83000782	Multiple	https://catalog.archives.gov/id/63791096	Listed
82001918	B and B Chemical Company	MASSACHUSETTS	Middlesex	Cambridge	780 Memorial Dr.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001918	Multiple	https://catalog.archives.gov/id/63790600	Listed
76000272	Baldwin, Maria, House	MASSACHUSETTS	Middlesex	Cambridge	196 Prospect St.	FALSE	5/11/1976	BLACK; EDUCATION; SOCIAL HISTORY	BUILDING	False	False	True	False	False			76000272	Single	https://catalog.archives.gov/id/63793749	Listed
82001919	Barnes, James B., House	MASSACHUSETTS	Middlesex	Cambridge	200 Monsignor O'Brien Hwy.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001919	Multiple	https://catalog.archives.gov/id/63790436	Listed
96000520	Beck-Warren House	MASSACHUSETTS	Middlesex	Cambridge	1 Prescott St.	FALSE	5/20/1996	PHILOSOPHY; EDUCATION; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA	Warren House	96000520	Multiple	https://catalog.archives.gov/id/63791386	Listed
86001272	Bennink-Douglas Cottages	MASSACHUSETTS	Middlesex	Cambridge	35--51 Walker St.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001272	Multiple	https://catalog.archives.gov/id/63791795	Listed
82001920	Berkeley Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Berkeley St.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Berkeley Street Historic District (Boundary Increas	82001920	Multiple	https://catalog.archives.gov/id/63790623	Listed
86001265	Berkeley Street Historic District (Boundary Increase)	MASSACHUSETTS	Middlesex	Cambridge	1--8 Berkeley Pl.	FALSE	5/19/1986	LITERATURE; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Berkeley Street Historic District	86001265	Multiple	https://catalog.archives.gov/id/63792287	Listed
86001270	Bertram Hall at Radcliffe College	MASSACHUSETTS	Middlesex	Cambridge	53 Shepard St.	FALSE	5/19/1986	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001270	Multiple	https://catalog.archives.gov/id/63792048	Listed
82001921	Beth Israel Synagogue	MASSACHUSETTS	Middlesex	Cambridge	238 Columbia St.	FALSE	4/13/1982	EUROPEAN	BUILDING	False	True	False	False	False	Cambridge MRA		82001921	Multiple	https://catalog.archives.gov/id/63790573	Listed
82001922	Bigelow Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Bigelow St.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001922	Multiple	https://catalog.archives.gov/id/63791090	Listed
82001923	Billings, Frederick, House	MASSACHUSETTS	Middlesex	Cambridge	45 Orchard St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001923	Multiple	https://catalog.archives.gov/id/63790377	Listed
75000295	Birkhoff, George D., House	MASSACHUSETTS	Middlesex	Cambridge	22 Craigie	FALSE	5/15/1975	SCIENCE	BUILDING	False	False	True	False	False			75000295	Single	https://catalog.archives.gov/id/63793773	Listed
97000561	Blake and Knowles Steam Pump Company National Register District	MASSACHUSETTS	Middlesex	Cambridge	Bounded by Third, Binney, Fifth, and Rogers Sts.	FALSE	6/13/1997	INDUSTRY; ARCHITECTURE	DISTRICT	True	False	False	False	False			97000561	Single	https://catalog.archives.gov/id/63795955	Listed
82001924	Bottle House Block	MASSACHUSETTS	Middlesex	Cambridge	204-214 3rd St.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001924	Multiple	https://catalog.archives.gov/id/63790506	Listed
86001276	Brabrook, E. H., House	MASSACHUSETTS	Middlesex	Cambridge	42--44 Avon St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001276	Multiple	https://catalog.archives.gov/id/63790938	Listed
83000784	Bradbury, William F., House	MASSACHUSETTS	Middlesex	Cambridge	369 Harvard St.	FALSE	6/30/1983	EDUCATION; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000784	Multiple	https://catalog.archives.gov/id/63790584	Listed
82001925	Brattle Hall	MASSACHUSETTS	Middlesex	Cambridge	40 Brattle St.	FALSE	4/13/1982	ENTERTAINMENT/RECREATION; EDUCATION; SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA		82001925	Multiple	https://catalog.archives.gov/id/63790566	Listed
73000286	Brattle, William, House	MASSACHUSETTS	Middlesex	Cambridge	42 Brattle St.	FALSE	5/8/1973	MILITARY; ARCHITECTURE; SOCIAL HISTORY	BUILDING	True	False	False	False	False			73000286	Single	https://catalog.archives.gov/id/63795895	Listed
75000298	Bridgman, Percy, House	MASSACHUSETTS	Middlesex	Cambridge	10 Buckingham Pl.	FALSE	5/15/1975	SCIENCE	BUILDING	False	False	True	False	False		Bridgman House--Buckingham School	75000298	Single	https://catalog.archives.gov/id/63793775	Listed
86002068	Brooks, Luther, House	MASSACHUSETTS	Middlesex	Cambridge	34 Kirkland St.	FALSE	9/12/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86002068	Multiple	https://catalog.archives.gov/id/63790906	Listed
82001926	Building at 10 Follen Street	MASSACHUSETTS	Middlesex	Cambridge	10 Follen St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001926	Multiple	https://catalog.archives.gov/id/63790484	Listed
83000790	Building at 102-104 Inman Street	MASSACHUSETTS	Middlesex	Cambridge	102-104 Inman St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000790	Multiple	https://catalog.archives.gov/id/63790540	Listed
83000789	Building at 104-106 Hancock Street	MASSACHUSETTS	Middlesex	Cambridge	104-106 Hancock St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000789	Multiple	https://catalog.archives.gov/id/63790454	Listed
82001927	Building at 106-108 Inman St	MASSACHUSETTS	Middlesex	Cambridge	106-108 Inman St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001927	Multiple	https://catalog.archives.gov/id/63790532	Listed
83000787	Building at 1707-1709 Cambridge Street	MASSACHUSETTS	Middlesex	Cambridge	1707-1709 Cambridge St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000787	Multiple	https://catalog.archives.gov/id/63790536	Listed
83000788	Building at 1715-1717 Cambridge Street	MASSACHUSETTS	Middlesex	Cambridge	1715-1717 Cambridge St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000788	Multiple	https://catalog.archives.gov/id/63790538	Listed
83000786	Building at 259 Mount Auburn Street	MASSACHUSETTS	Middlesex	Cambridge	259 Mt. Auburn St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000786	Multiple	https://catalog.archives.gov/id/63790512	Listed
82001928	Building at 42 Edward J. Lopez Avenue	MASSACHUSETTS	Middlesex	Cambridge	42 Edward J. Lopez Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001928	Multiple	https://catalog.archives.gov/id/63790548	Listed
82001929	Buildings at 110-112 Inman St.	MASSACHUSETTS	Middlesex	Cambridge	110-112 Inman St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001929	Multiple	https://catalog.archives.gov/id/63790534	Listed
82001930	Buildings at 15-17 Lee St.	MASSACHUSETTS	Middlesex	Cambridge	15-17 Lee St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001930	Multiple	https://catalog.archives.gov/id/63790464	Listed
83004293	Cambidge Common Historic District Amendment	MASSACHUSETTS	Middlesex	Cambridge	Massachusetts Ave. and Garden, Waterhouse, Cambridge, and Peabody Sts.	FALSE	6/30/1983	MILITARY; ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA	See Also:Cambridge Common Historic District	83004293	Multiple	https://catalog.archives.gov/id/63792299	Listed
73000281	Cambridge Common Historic District	MASSACHUSETTS	Middlesex	Cambridge	Garden, Waterhouse, Cambridge, and Peabody Sts., and Massachusetts Ave.	FALSE	4/13/1973	LANDSCAPE ARCHITECTURE; MILITARY; POLITICS/GOVERNMENT; ARCHITECTURE; RELIGION	DISTRICT	False	False	True	False	False	Cambridge MRA	See Also:Christ Church;Old Harvard Yard;Massachusetts Hall;H	73000281	Multiple	https://catalog.archives.gov/id/63791384	Listed

87000499	Cambridge Common Historic District (Boundary Increase and Decrease)	MASSACHUSETTS	Middlesex	Cambridge	Roughly NW of Waterhouse St. on Concord Ave. between Garden and Follen Sts.	FALSE	1/26/1987	LANDSCAPE ARCHITECTURE; EXPLORATION/SETTLEMENT; ARCHITECTURE; RELIGION	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Cambridge Common Historic District;Cambridge Common	87000499	Multiple	https://catalog.archives.gov/id/63792279	Listed
02001189	Cambridge Home for the Aged and Infirm	MASSACHUSETTS	Middlesex	Cambridge	650 Concord Ave.	FALSE	10/22/2002	ARCHITECTURE; COMMUNITY PLANNING AND DEVELOPMENT; HEALTH/MEDICINE	BUILDING	True	False	False	False	False		Neville Manor; Neville Place	02001189	Single	https://catalog.archives.gov/id/63795806	Listed
82001931	Cambridge Public Library	MASSACHUSETTS	Middlesex	Cambridge	449 Broadway St.	FALSE	4/13/1982	ARCHITECTURE; SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA		82001931	Multiple	https://catalog.archives.gov/id/63790586	Listed
78000435	Carpenter Center for the Visual Arts	MASSACHUSETTS	Middlesex	Cambridge	19 Prescott St.	FALSE	4/20/1978	ARCHITECTURE	BUILDING	False	False	True	False	False			78000435	Single	https://catalog.archives.gov/id/63795883	Listed
90000128	Central Square Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly Massachusetts Ave. from Clinton St. to Main St.	FALSE	3/2/1990	COMMUNITY PLANNING AND DEVELOPMENT; COMMERCE; TRANSPORTATION; ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA	See Also:City Hall Historic District;Odd Fellows Hall;First	90000128	Multiple	https://catalog.archives.gov/id/63791518	Listed
78000436	Charles River Basin Historic District	MASSACHUSETTS	Middlesex	Cambridge	Both banks of Charles River from Eliot Bridge to Charles River Dam	FALSE	12/22/1978	COMMUNITY PLANNING AND DEVELOPMENT; LANDSCAPE ARCHITECTURE; CONSERVATION; TRANSPORTATION; SOCIAL HISTORY	DISTRICT	False	True	False	False	False			78000436	Single		Listed
83000791	Child, Francis J., House	MASSACHUSETTS	Middlesex	Cambridge	67 Kirkland St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000791	Multiple	https://catalog.archives.gov/id/63790554	Listed
66000140	Christ Church	MASSACHUSETTS	Middlesex	Cambridge	Garden St.	FALSE	10/15/1966	ARCHITECTURE	BUILDING	False	False	True	False	False			66000140	Single	https://catalog.archives.gov/id/63793737	Listed
83000792	Church of the New Jerusalem	MASSACHUSETTS	Middlesex	Cambridge	50 Quincy St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000792	Multiple	https://catalog.archives.gov/id/63790609	Listed
82001932	City Hall Historic District	MASSACHUSETTS	Middlesex	Cambridge	Massachusetts Ave., Bigelow and Temple Sts, Inman and Richard Allen Dr.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001932	Multiple	https://catalog.archives.gov/id/63791233	Listed
83000793	Cloverden	MASSACHUSETTS	Middlesex	Cambridge	29 Fallen St.	FALSE	6/30/1983	SCIENCE; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA	Man House	83000793	Multiple	https://catalog.archives.gov/id/63790617	Listed
82004968	Colburn, Sarah Foster, House	MASSACHUSETTS	Middlesex	Cambridge	7 Dana St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82004968	Multiple	https://catalog.archives.gov/id/63790950	Listed
82001933	Conventual Church of St. Mary and St. John	MASSACHUSETTS	Middlesex	Cambridge	980 Memorial Dr.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001933	Multiple	https://catalog.archives.gov/id/63790611	Listed
82001934	Cook, William, House	MASSACHUSETTS	Middlesex	Cambridge	71 Appleton St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001934	Multiple	https://catalog.archives.gov/id/63790486	Listed
83000795	Coolidge, Josiah, House	MASSACHUSETTS	Middlesex	Cambridge	24 Coolidge Hill Rd.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000795	Multiple	https://catalog.archives.gov/id/63790518	Listed
72000124	Cooper-Frost-Austin House	MASSACHUSETTS	Middlesex	Cambridge	21 Linnaean St.	FALSE	9/22/1972	ARCHITECTURE	BUILDING	False	True	False	False	False			72000124	Single	https://catalog.archives.gov/id/63795620	Listed
86001575	Craigie Arms	MASSACHUSETTS	Middlesex	Cambridge	2--6 University Rd., 122 Mt. Auburn, and 6 Bennett Sts.	FALSE	7/10/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		86001575	Multiple	https://catalog.archives.gov/id/63791650	Listed
83000796	cummings, e.e., House	MASSACHUSETTS	Middlesex	Cambridge	104 Irving St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000796	Multiple	https://catalog.archives.gov/id/63790488	Listed
76000305	Daly, Reginald A., House	MASSACHUSETTS	Middlesex	Cambridge	23 Hawthorn St.	FALSE	1/7/1976	SCIENCE	BUILDING	False	False	True	False	False			76000305	Single	https://catalog.archives.gov/id/63793777	Listed
86001682	Dana-Palmer House	MASSACHUSETTS	Middlesex	Cambridge	12--16 Quincy St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001682	Multiple	https://catalog.archives.gov/id/63790761	Listed
76000306	Davis, William Morris, House	MASSACHUSETTS	Middlesex	Cambridge	17 Francis St.	FALSE	1/7/1976	SCIENCE	BUILDING	False	False	True	False	False			76000306	Single	https://catalog.archives.gov/id/63793779	Listed
82001935	Day, Anna, House	MASSACHUSETTS	Middlesex	Cambridge	139 Cushing St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001935	Multiple	https://catalog.archives.gov/id/63790530	Listed
82001936	Deane-Williams House	MASSACHUSETTS	Middlesex	Cambridge	21-23 Fayette St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001936	Multiple	https://catalog.archives.gov/id/63790466	Listed
90000142	DeRosay-McNamee House	MASSACHUSETTS	Middlesex	Cambridge	50 Mt. Vernon St.	FALSE	3/2/1990	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		90000142	Multiple	https://catalog.archives.gov/id/63791360	Listed
86002071	Divinity Hall	MASSACHUSETTS	Middlesex	Cambridge	12 Divinity Ave.	FALSE	9/12/1986	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86002071	Multiple	https://catalog.archives.gov/id/63792040	Listed
82001937	Dodge, Edward, House	MASSACHUSETTS	Middlesex	Cambridge	70 Sparks St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001937	Multiple	https://catalog.archives.gov/id/63790477	Listed
86001279	Dunvegan, The	MASSACHUSETTS	Middlesex	Cambridge	1654 Massachusetts Ave.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001279	Multiple	https://catalog.archives.gov/id/63791746	Listed
83000797	East Cambridge Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by Cambridge, Hurley and 5th Sts.	FALSE	6/30/1983	INDUSTRY; ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA		83000797	Multiple	https://catalog.archives.gov/id/63792130	Listed
82001938	East Cambridge Savings Bank	MASSACHUSETTS	Middlesex	Cambridge	292 Cambridge St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001938	Multiple	https://catalog.archives.gov/id/63790496	Listed
86001280	Eliot Hall at Radcliffe College	MASSACHUSETTS	Middlesex	Cambridge	51 Shepard St.	FALSE	5/19/1986	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001280	Multiple	https://catalog.archives.gov/id/63792050	Listed
83000798	Ellis, Asa, House	MASSACHUSETTS	Middlesex	Cambridge	158 Auburn St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000798	Multiple	https://catalog.archives.gov/id/63790440	Listed
66000364	Elmwood	MASSACHUSETTS	Middlesex	Cambridge	33 Elmwood Ave.	FALSE	10/15/1966	LITERATURE; POLITICS/GOVERNMENT; ARCHITECTURE	DISTRICT	False	False	True	False	False		James Russell Lowell House;Oliver-Gerry-Lowell House	66000364	Single	https://catalog.archives.gov/id/63793751	Listed
82001939	Farwell, R.H., House	MASSACHUSETTS	Middlesex	Cambridge	2222-2224 Massachusetts Ave.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001939	Multiple	https://catalog.archives.gov/id/63790558	Listed
83000799	Fay, Issac, House	MASSACHUSETTS	Middlesex	Cambridge	123 Antrim St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000799	Multiple	https://catalog.archives.gov/id/63790579	Listed
75000249	First Baptist Church	MASSACHUSETTS	Middlesex	Cambridge	Magazine and River Sts.	FALSE	4/14/1975	ARCHITECTURE	BUILDING	True	False	False	False	False			75000249	Single	https://catalog.archives.gov/id/63795598	Listed
83000800	Flentje, Ernst, House	MASSACHUSETTS	Middlesex	Cambridge	129 Magazine St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000800	Multiple	https://catalog.archives.gov/id/63790430	Listed
86001282	Fogg Art Museum	MASSACHUSETTS	Middlesex	Cambridge	26--32 Quincy St.	FALSE	5/19/1986	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001282	Multiple	https://catalog.archives.gov/id/63792052	Listed
86001681	Follen Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	1--44 and 5--29 Follen St.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; EDUCATION; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		86001681	Multiple	https://catalog.archives.gov/id/63791996	Listed
73000284	Fort Washington	MASSACHUSETTS	Middlesex	Cambridge	95 Waverly St.	FALSE	4/3/1973	LANDSCAPE ARCHITECTURE; CONSERVATION; MILITARY	STRUCTURE	True	True	False	False	False			73000284	Single	https://catalog.archives.gov/id/63796140	Listed
82001940	Fresh Pond Hotel	MASSACHUSETTS	Middlesex	Cambridge	234 Lakeview Ave.	FALSE	4/13/1982	SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA		82001940	Multiple	https://catalog.archives.gov/id/63790571	Listed
04001429	Fresh Pond Parkway-Metropolitan Park System of Greater Boston	MASSACHUSETTS	Middlesex	Cambridge	Fresh Pond Parkway	FALSE	1/5/2005	COMMUNITY PLANNING AND DEVELOPMENT; ENGINEERING; LANDSCAPE ARCHITECTURE; TRANSPORTATION	DISTRICT	False	True	False	False	False	Metropolitan Park System of Greater Boston MPS		04001429	Multiple	https://catalog.archives.gov/id/63792002	Listed
83000801	Frost, David, House	MASSACHUSETTS	Middlesex	Cambridge	26 Gray St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000801	Multiple	https://catalog.archives.gov/id/63790520	Listed
83000802	Frost, Elizabeth, Tenanthouse	MASSACHUSETTS	Middlesex	Cambridge	35 Bowdoin St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000802	Multiple	https://catalog.archives.gov/id/63790522	Listed

Appendix G
National Register of Historic Places
Cambridge, MA

82001941	Frost, Robert, House	MASSACHUSETTS	Middlesex	Cambridge	29-35 Brewster St.	FALSE	4/13/1982	LITERATURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001941	Multiple	https://catalog.archives.gov/id/63792281	Listed
82001942	Frost, Walter, House	MASSACHUSETTS	Middlesex	Cambridge	10 Frost St.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001942	Multiple	https://catalog.archives.gov/id/63790514	Listed
71000686	Fuller, Margaret, House	MASSACHUSETTS	Middlesex	Cambridge	71 Cherry St.	FALSE	7/2/1971	SOCIAL HISTORY	BUILDING	False	False	True	False	False		Margaret Fuller Neighborhood House	71000686	Single	https://catalog.archives.gov/id/63796176	Listed
87002543	Gale, George, House	MASSACHUSETTS	Middlesex	Cambridge	14--16 Clinton St.	FALSE	2/10/1988	INDUSTRY; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		87002543	Multiple	https://catalog.archives.gov/id/63792110	Listed
83000803	Garfield Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Garfield St. between Massachusetts Ave. and Oxford St.	FALSE	6/30/1983	ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA		83000803	Multiple	https://catalog.archives.gov/id/63791212	Listed
100003472	George Close Company Building	MASSACHUSETTS	Middlesex	Cambridge	243 Broadway	FALSE	3/15/2019	ARCHITECTURE; INDUSTRY	building	True	False	False	False	False			100003472	Single		Listed
86001283	Gray Gardens East and West Historic District	MASSACHUSETTS	Middlesex	Cambridge	1--37 Gray Gardens E, 3--24 Gray Gardens W, 91 Garden and 60 Raymond Sts.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		86001283	Multiple	https://catalog.archives.gov/id/63791662	Listed
66000655	Gray, Asa, House	MASSACHUSETTS	Middlesex	Cambridge	88 Garden St.	FALSE	10/15/1966	SCIENCE	BUILDING	False	False	True	False	False			66000655	Single	https://catalog.archives.gov/id/63793783	Listed
82001943	Greek Revival Cottage	MASSACHUSETTS	Middlesex	Cambridge	59 Rice St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001943	Multiple	https://catalog.archives.gov/id/63790442	Listed
83000806	Hall Tavern	MASSACHUSETTS	Middlesex	Cambridge	20 Gray Gardens West St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000806	Multiple	https://catalog.archives.gov/id/63790498	Listed
86001284	Hapgood, Richard, House	MASSACHUSETTS	Middlesex	Cambridge	382--392 Harvard St.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001284	Multiple	https://catalog.archives.gov/id/63791819	Listed
86002073	Harvard Houses Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by Mt. Auburn & Grant & Cowperwaite Sts., Banks St. & Putman Ave., the Memorial River, & Boyleston St.	FALSE	9/12/1986	EDUCATION; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		86002073	Multiple	https://catalog.archives.gov/id/63792054	Listed
78000440	Harvard Lampoon Building	MASSACHUSETTS	Middlesex	Cambridge	44 Bow St.	FALSE	3/30/1978	LITERATURE; ARCHITECTURE	BUILDING	True	False	False	False	False		The Lampoon Castle	78000440	Single	https://catalog.archives.gov/id/63795901	Listed
82001944	Harvard Square Historic District	MASSACHUSETTS	Middlesex	Cambridge	Massachusetts Ave., Boylston and Brattle Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Harvard Square Subway Kiosk;Harvard Square Historic	82001944	Multiple	https://catalog.archives.gov/id/63790948	Listed
86003654	Harvard Square Historic District (Boundary Increase)	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by Harvard & Massachusetts Aves., Mt. Auburn, Winthrop, Bennett, Story & Church Sts.	FALSE	7/28/1988	COMMUNITY PLANNING AND DEVELOPMENT; MILITARY; TRANSPORTATION; ENTERTAINMENT/RECREATION; EDUCATION; ARCHITECTURE; SOCIAL HISTORY	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Harvard Square Historic District;Cambridge MRA;Brat	86003654	Multiple	https://catalog.archives.gov/id/63792030	Listed
78000441	Harvard Square Subway Kiosk	MASSACHUSETTS	Middlesex	Cambridge	Massachusetts Ave. and Boylston St.	FALSE	1/30/1978	TRANSPORTATION; ARCHITECTURE	BUILDING	True	False	False	False	False			78000441	Single	https://catalog.archives.gov/id/63796067	Listed
82001945	Harvard Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Harvard St. Between Ellery and Hancock Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001945	Multiple	https://catalog.archives.gov/id/63790962	Listed
87000500	Harvard Union	MASSACHUSETTS	Middlesex	Cambridge	Quincy and Harvard Sts.	FALSE	1/26/1987	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		87000500	Multiple	https://catalog.archives.gov/id/63791116	Listed
87002137	Harvard Yard Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by underpass, Broadway & Quincy Sts., Massachusetts Ave., & Peabody St.	FALSE	12/14/1987	EDUCATION; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA	See Also:Masssachusetts Hall;Sever Hall	87002137	Multiple	https://catalog.archives.gov/id/63792044	Listed
82001946	Hastings Square Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by Rockingham, Henry, Chestnut and Brookline Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001946	Multiple	https://catalog.archives.gov/id/63791196	Listed
70000681	Hastings, Oliver, House	MASSACHUSETTS	Middlesex	Cambridge	101 Brattle St.	FALSE	12/30/1970	ARCHITECTURE	BUILDING	False	False	True	False	False		Hodges House	70000681	Single	https://catalog.archives.gov/id/63793725	Listed
78000442	Hasty Pudding Club	MASSACHUSETTS	Middlesex	Cambridge	12 Holyoke St.	FALSE	1/9/1978	PERFORMING ARTS	BUILDING	False	False	True	False	False			78000442	Single	https://catalog.archives.gov/id/63796150	Listed
82001947	Henderson Carriage Repository	MASSACHUSETTS	Middlesex	Cambridge	2067-2089 Massachusetts Ave.	FALSE	4/13/1982	INDUSTRY	BUILDING	False	True	False	False	False	Cambridge MRA		82001947	Multiple	https://catalog.archives.gov/id/63790508	Listed
82001948	Higginson, Col. Thomas Wentworth, House	MASSACHUSETTS	Middlesex	Cambridge	29 Buckingham St.	FALSE	4/13/1982	LITERATURE; ARCHITECTURE; SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA		82001948	Multiple	https://catalog.archives.gov/id/63790494	Listed
83000807	Hill, Aaron, House	MASSACHUSETTS	Middlesex	Cambridge	17 Brown St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000807	Multiple	https://catalog.archives.gov/id/63790550	Listed
83000808	Holmes, Joseph, House	MASSACHUSETTS	Middlesex	Cambridge	144 Coolidge Hill St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000808	Multiple	https://catalog.archives.gov/id/63790524	Listed
83004030	Homer-Lovell House	MASSACHUSETTS	Middlesex	Cambridge	11 Forest St.	FALSE	12/22/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83004030	Multiple	https://catalog.archives.gov/id/63791240	Listed
83000809	Hooper-Eliot House	MASSACHUSETTS	Middlesex	Cambridge	25 Reservoir Rd.	FALSE	6/30/1983	EDUCATION; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000809	Multiple	https://catalog.archives.gov/id/63790588	Listed
79000355	Hooper-Lee Nichols House	MASSACHUSETTS	Middlesex	Cambridge	159 Brattle St.	FALSE	6/15/1979	POLITICS/GOVERNMENT; ARCHITECTURE	BUILDING	True	False	False	False	False			79000355	Single	https://catalog.archives.gov/id/63796021	Listed
83000811	Howe House	MASSACHUSETTS	Middlesex	Cambridge	6 Appleton St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000811	Multiple	https://catalog.archives.gov/id/63790482	Listed
82001949	Howells, William Dean, House	MASSACHUSETTS	Middlesex	Cambridge	37 Concord Ave.	FALSE	4/13/1982	LITERATURE; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001949	Multiple	https://catalog.archives.gov/id/63790490	Listed
82001953	Hoyt, Benjamin, House	MASSACHUSETTS	Middlesex	Cambridge	134 Otis St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001953	Multiple	https://catalog.archives.gov/id/63790424	Listed
82001950	Hubbard Park Historic District	MASSACHUSETTS	Middlesex	Cambridge	Hubbard Park, Mercer Circle and Sparks Sts.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001950	Multiple	https://catalog.archives.gov/id/63791847	Listed
82001951	Inman Square Historic District	MASSACHUSETTS	Middlesex	Cambridge	Hampshire, Cambridge, and Inman Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001951	Multiple	https://catalog.archives.gov/id/63791208	Listed
86001308	Jarvis, The	MASSACHUSETTS	Middlesex	Cambridge	27 Everett St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001308	Multiple	https://catalog.archives.gov/id/63791148	Listed
83000813	Jones, William R., House	MASSACHUSETTS	Middlesex	Cambridge	307 Harvard St.	FALSE	6/30/1983	INDUSTRY; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000813	Multiple	https://catalog.archives.gov/id/63790596	Listed
89002285	Kennedy, F. A., Steam Bakery	MASSACHUSETTS	Middlesex	Cambridge	129 Franklin St.	FALSE	1/4/1990	INDUSTRY; ARCHITECTURE; INVENTION	BUILDING	True	False	False	False	False		Kennedy Steam Cracker Bakery;Kennedy Biscuit Factory	89002285	Single	https://catalog.archives.gov/id/63795961	Listed
82001952	Kidder-Sargent-McCrehan House	MASSACHUSETTS	Middlesex	Cambridge	146 Rindge Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001952	Multiple	https://catalog.archives.gov/id/63790379	Listed
82001954	Kingsley, Chester, House	MASSACHUSETTS	Middlesex	Cambridge	10 Chester St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001954	Multiple	https://catalog.archives.gov/id/63791256	Listed
86001683	Kirkland Place Historic District	MASSACHUSETTS	Middlesex	Cambridge	Kirkland Pl.	FALSE	5/19/1986	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		86001683	Multiple	https://catalog.archives.gov/id/63791088	Listed
82001955	Lamson, Rufus, House	MASSACHUSETTS	Middlesex	Cambridge	72-74 Hampshire St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001955	Multiple	https://catalog.archives.gov/id/63790444	Listed
82001956	Larches, The	MASSACHUSETTS	Middlesex	Cambridge	22 Larch Rd.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001956	Multiple	https://catalog.archives.gov/id/63790526	Listed
82001957	Lechmere Point Corporation Houses	MASSACHUSETTS	Middlesex	Cambridge	45-51 Gore St. and 25 3rd St.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001957	Multiple	https://catalog.archives.gov/id/63790516	Listed
76001970	Little, Arthur D., Inc., Building	MASSACHUSETTS	Middlesex	Cambridge	Memorial Dr.	FALSE	12/8/1976	SCIENCE	BUILDING	False	False	True	False	False			76001970	Single	https://catalog.archives.gov/id/63793787	Listed

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86002070	Littlefield-Roberts House	MASSACHUSETTS	Middlesex	Cambridge	16 Prescott St.	FALSE	9/12/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			86002070	Multiple	https://catalog.archives.gov/id/63791086	Listed
66000049	Longfellow National Historic Site	MASSACHUSETTS	Middlesex	Cambridge	105 Brattle St.	FALSE	10/15/1966	MILITARY; LITERATURE; ARCHITECTURE	BUILDING	False	False	True	False	False				66000049	Single	https://catalog.archives.gov/id/63795983	Listed
83000814	Lovell Block	MASSACHUSETTS	Middlesex	Cambridge	1853 Massachusetts Ave.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA			83000814	Multiple	https://catalog.archives.gov/id/63790500	Listed
86002076	Lovering, Joseph, House	MASSACHUSETTS	Middlesex	Cambridge	38 Kirkland St.	FALSE	9/12/1986	EDUCATION; SCIENCE; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			86002076	Multiple	https://catalog.archives.gov/id/63792064	Listed
82001958	Lowell School	MASSACHUSETTS	Middlesex	Cambridge	25 Lowell St.	FALSE	4/13/1982	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001958	Multiple	https://catalog.archives.gov/id/63790582	Listed
83000815	Lowell, The	MASSACHUSETTS	Middlesex	Cambridge	33 Lexington Ave.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA			83000815	Multiple	https://catalog.archives.gov/id/63790432	Listed
83000816	Maple Avenue Historic District	MASSACHUSETTS	Middlesex	Cambridge	Maple Ave. between Marie Ave. and Broadway	FALSE	6/30/1983	ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA			83000816	Multiple	https://catalog.archives.gov/id/63791092	Listed
82001959	Mason, Josiah, Jr., House	MASSACHUSETTS	Middlesex	Cambridge	11 Market St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001959	Multiple	https://catalog.archives.gov/id/63790468	Listed
83000817	Mason, W. A., House	MASSACHUSETTS	Middlesex	Cambridge	87 Raymond St.	FALSE	6/30/1983	SCIENCE	BUILDING	True	False	False	False	False	Cambridge MRA			83000817	Multiple	https://catalog.archives.gov/id/63790546	Listed
66000769	Massachusetts Hall, Harvard University	MASSACHUSETTS	Middlesex	Cambridge	Harvard University Yard	FALSE	10/15/1966	EDUCATION; EXPLORATION/SETTLEMENT	BUILDING	False	False	True	False	False				66000769	Single	https://catalog.archives.gov/id/63793747	Listed
82001960	McLean, Isaac, House	MASSACHUSETTS	Middlesex	Cambridge	2218 Massachusetts Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001960	Multiple	https://catalog.archives.gov/id/63790426	Listed
82001961	Mead, Alpheus, House	MASSACHUSETTS	Middlesex	Cambridge	2200 Massachusetts Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001961	Multiple	https://catalog.archives.gov/id/63790472	Listed
82001962	Melvin, Isaac, House	MASSACHUSETTS	Middlesex	Cambridge	19 Centre St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001962	Multiple	https://catalog.archives.gov/id/63790462	Listed
86001310	Memorial Drive Apartments Historic District	MASSACHUSETTS	Middlesex	Cambridge	983--984, 985--986, 987--989, and 992--993 Memorial Dr.	FALSE	5/19/1986	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA			86001310	Multiple	https://catalog.archives.gov/id/63790699	Listed
70000685	Memorial Hall, Harvard University	MASSACHUSETTS	Middlesex	Cambridge	Cambridge and Quincy Sts., Harvard University campus	FALSE	12/30/1970	ARCHITECTURE	BUILDING	False	False	True	False	False				70000685	Single	https://catalog.archives.gov/id/63793727	Listed
86001311	Montrose, The	MASSACHUSETTS	Middlesex	Cambridge	1648 Massachusetts Ave.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			86001311	Multiple	https://catalog.archives.gov/id/63791748	Listed
75000254	Mount Auburn Cemetery	MASSACHUSETTS	Middlesex	Cambridge	580 Mount Auburn St.	FALSE	4/21/1975	LANDSCAPE ARCHITECTURE; ARCHITECTURE	district	False	False	True	False	False				75000254	Single	https://catalog.archives.gov/id/63795977	Listed
83000818	Mount Auburn Cemetery Reception House	MASSACHUSETTS	Middlesex	Cambridge	583 Mt. Auburn St.	FALSE	6/30/1983	ARCHITECTURE; RELIGION	BUILDING	True	False	False	False	False	Cambridge MRA			83000818	Multiple	https://catalog.archives.gov/id/63790619	Listed
05001209	New England Confectionery Company Factory	MASSACHUSETTS	Middlesex	Cambridge	250 Massachusetts Ave.	FALSE	11/9/2005	ARCHITECTURE; COMMERCE; ENGINEERING; INDUSTRY; SOCIAL HISTORY	BUILDING	True	True	False	False	False			NECCO Candy Factory	05001209	Single	https://catalog.archives.gov/id/63795712	Listed
82001963	Newman, Andrew, House	MASSACHUSETTS	Middlesex	Cambridge	23 Fairmont St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001963	Multiple	https://catalog.archives.gov/id/63790470	Listed
82001964	Norfolk Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Norfolk St. between Suffolk and Austin Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA			82001964	Multiple	https://catalog.archives.gov/id/63790966	Listed
83000819	North Avenue Congregational Church	MASSACHUSETTS	Middlesex	Cambridge	183 Massachusetts Ave.	FALSE	6/30/1983	ARCHITECTURE; RELIGION	BUILDING	True	False	False	False	False	Cambridge MRA			83000819	Multiple	https://catalog.archives.gov/id/63790575	Listed
82001965	Noyes, J.A., House	MASSACHUSETTS	Middlesex	Cambridge	1 Highland St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001965	Multiple	https://catalog.archives.gov/id/63790428	Listed
82001967	Odd Fellows Hall	MASSACHUSETTS	Middlesex	Cambridge	536 Massachusetts Ave.	FALSE	4/13/1982	ENTERTAINMENT/RECREATION; ARCHITECTURE; SOCIAL HISTORY	BUILDING	False	True	False	False	False	Cambridge MRA			82001967	Multiple	https://catalog.archives.gov/id/63790502	Listed
82001968	Old Cambridge Baptist Church	MASSACHUSETTS	Middlesex	Cambridge	398 Harvard St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001968	Multiple	https://catalog.archives.gov/id/63790607	Listed
83000821	Old Cambridge Historic District	MASSACHUSETTS	Middlesex	Cambridge	Irregular pattern along Brattle St.	FALSE	6/30/1983	COMMERCE; EDUCATION; ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA		See Also: Stoughton, Mary Fisk, House	83000821	Multiple	https://catalog.archives.gov/id/63791520	Listed
83000820	Old Cambridgport Historic District	MASSACHUSETTS	Middlesex	Cambridge	Cherry, Harvard and Washington Sts.	FALSE	6/30/1983	LITERATURE; POLITICS/GOVERNMENT; ARCHITECTURE	DISTRICT	True	False	False	False	False	Cambridge MRA			83000820	Multiple	https://catalog.archives.gov/id/63792291	Listed
73000287	Old Harvard Yard	MASSACHUSETTS	Middlesex	Cambridge	Massachusetts Ave. and Cambridge St.	FALSE	2/6/1973	EDUCATION; ARCHITECTURE	DISTRICT	False	False	True	False	False			see also:Cambridge Common Historic District;Massachusetts	73000287	Single	https://catalog.archives.gov/id/63795903	Listed
82001969	Opposition House	MASSACHUSETTS	Middlesex	Cambridge	2-4 Hancock Pl.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; POLITICS/GOVERNMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001969	Multiple	https://catalog.archives.gov/id/63790569	Listed
83000822	Orne, Sarah, House	MASSACHUSETTS	Middlesex	Cambridge	10 Coolidge Hill Rd.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA			83000822	Multiple	https://catalog.archives.gov/id/63790528	Listed
86001312	Peabody Court Apartments	MASSACHUSETTS	Middlesex	Cambridge	41--43 Linnaean St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			86001312	Multiple	https://catalog.archives.gov/id/63790647	Listed
83000824	Porcellian Club	MASSACHUSETTS	Middlesex	Cambridge	1320-24 Massachusetts Ave.	FALSE	6/30/1983	ARCHITECTURE; SOCIAL HISTORY	BUILDING	True	False	False	False	False	Cambridge MRA			83000824	Multiple	https://catalog.archives.gov/id/63790434	Listed
73000288	Pratt, Dexter, House	MASSACHUSETTS	Middlesex	Cambridge	54 Brattle St.	FALSE	5/8/1973	LITERATURE; ARCHITECTURE	BUILDING	True	False	False	False	False			The Window Shop	73000288	Single	https://catalog.archives.gov/id/63795987	Listed
82001970	Prospect Congregational Church	MASSACHUSETTS	Middlesex	Cambridge	99 Prospect St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001970	Multiple	https://catalog.archives.gov/id/63791314	Listed
82001971	Read, Cheney, House	MASSACHUSETTS	Middlesex	Cambridge	135 Western Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001971	Multiple	https://catalog.archives.gov/id/63790446	Listed
82001972	Reardon, Edmund, House	MASSACHUSETTS	Middlesex	Cambridge	195 Erie St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001972	Multiple	https://catalog.archives.gov/id/63790479	Listed
85002663	Reversible Collar Company Building	MASSACHUSETTS	Middlesex	Cambridge	25--27 Mt. Auburn & 10--12 Arrow Sts.	FALSE	9/27/1985	INDUSTRY; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			85002663	Multiple	https://catalog.archives.gov/id/63792195	Listed
76001999	Richards, Theodore W., House	MASSACHUSETTS	Middlesex	Cambridge	15 Follen St.	FALSE	1/7/1976	SCIENCE	BUILDING	False	False	True	False	False			15 Follen St.	76001999	Single		Listed
82001973	River Street Firehouse	MASSACHUSETTS	Middlesex	Cambridge	176 River St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001973	Multiple	https://catalog.archives.gov/id/63790605	Listed
82001974	Sacred Heart Church, Rectory, School and Convent	MASSACHUSETTS	Middlesex	Cambridge	6th and Thorndike Sts.	FALSE	4/13/1982	ARCHITECTURE; RELIGION	BUILDING	False	True	False	False	False	Cambridge MRA			82001974	Multiple	https://catalog.archives.gov/id/63790577	Listed
82001975	Salem-Auburn Streets Historic District	MASSACHUSETTS	Middlesex	Cambridge	Salem and Auburn Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA			82001975	Multiple	https://catalog.archives.gov/id/63790830	Listed
76000238	Sands, Hiram, House	MASSACHUSETTS	Middlesex	Cambridge	22 Putnam Ave.	FALSE	4/30/1976	INDUSTRY; ARCHITECTURE	BUILDING	True	False	False	False	False				76000238	Single	https://catalog.archives.gov/id/63795951	Listed
82001976	Sands, Ivory, House	MASSACHUSETTS	Middlesex	Cambridge	145 Elm St.	FALSE	4/13/1982	INDUSTRY; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			82001976	Multiple	https://catalog.archives.gov/id/63790594	Listed
83000825	Saunders, William, House	MASSACHUSETTS	Middlesex	Cambridge	6 Prentiss St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA			83000825	Multiple	https://catalog.archives.gov/id/63790456	Listed
86002075	Sears Tower-Harvard Observatory	MASSACHUSETTS	Middlesex	Cambridge	60 Garden St.	FALSE	2/26/1987	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA			86002075	Multiple	https://catalog.archives.gov/id/63791134	Listed
83000826	Second Cambridge Savings Bank Building	MASSACHUSETTS	Middlesex	Cambridge	11-21 Dunster St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA			83000826	Multiple	https://catalog.archives.gov/id/63790504	Listed

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83000827	Second Waterhouse House	MASSACHUSETTS	Middlesex	Cambridge	9 Follen St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000827	Multiple	https://catalog.archives.gov/id/63790542	Listed
70000732	Sever Hall, Harvard University	MASSACHUSETTS	Middlesex	Cambridge	Harvard Yard	FALSE	12/30/1970	ARCHITECTURE	BUILDING	False	False	True	False	False			70000732	Single	https://catalog.archives.gov/id/63793731	Listed
86001680	Shady Hill Historic District	MASSACHUSETTS	Middlesex	Cambridge	Roughly bounded by Museum, Beacon and Holden, and Kirkland Sts., and Francis Ave.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; EDUCATION; ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		86001680	Multiple	https://catalog.archives.gov/id/63791994	Listed
94000546	Shell Oil Company "Spectacular" Sign	MASSACHUSETTS	Middlesex	Cambridge	187 Magazine St.	FALSE	6/3/1994	OTHER; ART; COMMERCE; TRANSPORTATION	OBJECT	True	False	False	False	False		Shell Sign (preferred)	94000546	Single	https://catalog.archives.gov/id/63795506	Listed
82001977	Slowey, Patrick, House	MASSACHUSETTS	Middlesex	Cambridge	73 Bolton St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001977	Multiple	https://catalog.archives.gov/id/63790544	Listed
82001978	Soule, Lawrence, House	MASSACHUSETTS	Middlesex	Cambridge	11 Russell St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001978	Multiple	https://catalog.archives.gov/id/63790560	Listed
83000828	St. James Episcopal Church	MASSACHUSETTS	Middlesex	Cambridge	1991 Massachusetts Ave.	FALSE	6/30/1983	ARCHITECTURE; RELIGION	BUILDING	True	False	False	False	False	Cambridge MRA		83000828	Multiple	https://catalog.archives.gov/id/63790613	Listed
83000829	St. John's Roman Catholic Church	MASSACHUSETTS	Middlesex	Cambridge	2270 Massachusetts Ave.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000829	Multiple	https://catalog.archives.gov/id/63790615	Listed
86001313	Stanstead, The	MASSACHUSETTS	Middlesex	Cambridge	19 Ware St.	FALSE	5/19/1986	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001313	Multiple	https://catalog.archives.gov/id/63791875	Listed
86001315	Stickney-Shepard House	MASSACHUSETTS	Middlesex	Cambridge	11--13 Remington St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001315	Multiple	https://catalog.archives.gov/id/63790886	Listed
89001246	Stoughton, Mary Fisk, House	MASSACHUSETTS	Middlesex	Cambridge	90 Brattle St.	FALSE	6/29/1989	ARCHITECTURE	BUILDING	False	False	True	False	False		See Also: Cambridge MRA; Old Cambridge Historic District	89001246	Single		Listed
82001979	Taylor Square Firehouse	MASSACHUSETTS	Middlesex	Cambridge	113 Garden St.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001979	Multiple	https://catalog.archives.gov/id/63790556	Listed
86002078	Treadwell-Sparks House	MASSACHUSETTS	Middlesex	Cambridge	21 Kirkland St.	FALSE	9/12/1986	EDUCATION; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86002078	Multiple	https://catalog.archives.gov/id/63792058	Listed
82001980	Union Railway Car Barn	MASSACHUSETTS	Middlesex	Cambridge	613-621 Cambridge St.	FALSE	4/13/1982	TRANSPORTATION	BUILDING	False	True	False	False	False	Cambridge MRA		82001980	Multiple	https://catalog.archives.gov/id/63790510	Listed
70000736	University Hall, Harvard University	MASSACHUSETTS	Middlesex	Cambridge	Harvard Yard	FALSE	12/30/1970	ARCHITECTURE	BUILDING	False	False	True	False	False			70000736	Single	https://catalog.archives.gov/id/63793719	Listed
86002081	University Museum	MASSACHUSETTS	Middlesex	Cambridge	11--25 Divinity Ave.	FALSE	9/12/1986	EDUCATION; SCIENCE	BUILDING	False	True	False	False	False	Cambridge MRA	Peabody Museum;Museum of Comparative Zoology	86002081	Multiple	https://catalog.archives.gov/id/63792062	Listed
82001981	Upper Magazine Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Cottage, Magazine, William and Perry Sts.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001981	Multiple	https://catalog.archives.gov/id/63791206	Listed
82001982	Urban Rowhouse	MASSACHUSETTS	Middlesex	Cambridge	40-48 Pearl St.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001982	Multiple	https://catalog.archives.gov/id/63790552	Listed
82001983	Urban Rowhouse	MASSACHUSETTS	Middlesex	Cambridge	30-38 Pearl St.	FALSE	4/13/1982	COMMUNITY PLANNING AND DEVELOPMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001983	Multiple	https://catalog.archives.gov/id/63790562	Listed
83000831	Urban Rowhouse	MASSACHUSETTS	Middlesex	Cambridge	26-32 River St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000831	Multiple	https://catalog.archives.gov/id/63790475	Listed
86001343	US Post Office-Central Square	MASSACHUSETTS	Middlesex	Cambridge	770 Massachusetts Ave.	FALSE	6/18/1986	ARCHITECTURE	BUILDING	True	False	False	False	False		Central Square Post Office;Cambridge "Branch A" Post Office	86001343	Single	https://catalog.archives.gov/id/63795590	Listed
83000832	Valentine Soap Workers Cottage	MASSACHUSETTS	Middlesex	Cambridge	5-7 Cottage St.	FALSE	6/30/1983	INDUSTRY; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000832	Multiple	https://catalog.archives.gov/id/63791532	Listed
83000833	Valentine Soap Workers Cottage	MASSACHUSETTS	Middlesex	Cambridge	101 Pearl St.	FALSE	6/30/1983	INDUSTRY; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000833	Multiple	https://catalog.archives.gov/id/63791534	Listed
83000834	Vinal, Albert, House	MASSACHUSETTS	Middlesex	Cambridge	325 Harvard St.	FALSE	6/30/1983	ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000834	Multiple	https://catalog.archives.gov/id/63790458	Listed
94000554	Walden Street Cattle Pass	MASSACHUSETTS	Middlesex	Cambridge	Adjacent to MBTA right-of-way at Walden St.	FALSE	6/3/1994	AGRICULTURE; COMMERCE; COMMUNITY PLANNING AND DEVELOPMENT	STRUCTURE	True	False	False	False	False	Cambridge MRA		94000554	Multiple	https://catalog.archives.gov/id/63790391	Listed
83000835	Ware Hall	MASSACHUSETTS	Middlesex	Cambridge	383 Harvard St.	FALSE	6/30/1983	EDUCATION; ARCHITECTURE	BUILDING	True	False	False	False	False	Cambridge MRA		83000835	Multiple	https://catalog.archives.gov/id/63790564	Listed
86001317	Warren, Langford H., House	MASSACHUSETTS	Middlesex	Cambridge	6 Garden Terr.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001317	Multiple	https://catalog.archives.gov/id/63791124	Listed
82001984	Watson, Abraham, House	MASSACHUSETTS	Middlesex	Cambridge	181-183 Sherman St.	FALSE	4/13/1982	MILITARY; POLITICS/GOVERNMENT; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001984	Multiple	https://catalog.archives.gov/id/63790602	Listed
82001985	Willis, Stillman, House	MASSACHUSETTS	Middlesex	Cambridge	1 Potter Park	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001985	Multiple	https://catalog.archives.gov/id/63790448	Listed
82001986	Winter Street Historic District	MASSACHUSETTS	Middlesex	Cambridge	Winter St.	FALSE	4/13/1982	ARCHITECTURE	DISTRICT	False	True	False	False	False	Cambridge MRA		82001986	Multiple	https://catalog.archives.gov/id/63791068	Listed
86001318	Withey, S. B., House	MASSACHUSETTS	Middlesex	Cambridge	10 Appian Way	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001318	Multiple	https://catalog.archives.gov/id/63790888	Listed
86001319	Wood, J. A., House	MASSACHUSETTS	Middlesex	Cambridge	3 Sacramento St.	FALSE	5/19/1986	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		86001319	Multiple	https://catalog.archives.gov/id/63790649	Listed
82001987	Wyeth Brickyard Superintendent's House	MASSACHUSETTS	Middlesex	Cambridge	336 Rindge Ave.	FALSE	4/13/1982	INDUSTRY; ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001987	Multiple	https://catalog.archives.gov/id/63790592	Listed
82001988	Wyeth, John, House	MASSACHUSETTS	Middlesex	Cambridge	56 Aberdeen Ave.	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001988	Multiple	https://catalog.archives.gov/id/63790450	Listed
82001989	Wyeth-Smith House	MASSACHUSETTS	Middlesex	Cambridge	152 Vassal Lane	FALSE	4/13/1982	ARCHITECTURE	BUILDING	False	True	False	False	False	Cambridge MRA		82001989	Multiple	https://catalog.archives.gov/id/63790438	Listed