GEI Consultants

Consulting Engineers and Scientists

March 20, 2018
Project 1701323

Via E-mail: NPDES.Generalpermits@epa.gov

Ms. Shelly Puleo
Environmental Protection Agency
RGP NOI Processing
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Dear Ms. Puleo:

Re: Notice of Intent
NPDES Remediation General Permit
New Vassar Street Residence Hall
Massachusetts Institute of Technology
Cambridge, Massachusetts

On behalf of MIT, GEI Consultants, Inc. has prepared this Notice of Intent (NOI) for coverage under the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP), Massachusetts General Permit (MAG910000). This NOI was prepared in accordance with the general requirements of the NPDES RGP under Federal Register, Vol. 82, No. 12, dated January 19, 2017, and related guidance documentation provided by the U.S. Environmental Protection Agency (EPA). The completed NOI form is provided in Appendix A.

A copy of this NOI is being sent to the MassDEP Bureau of Resource Protection Water along with a check in the amount of $500 payable to the Commonwealth of Massachusetts for the required compliance fee. A copy of the fee transmittal form is in Appendix B. Once EPA issues an RGP authorization for this project, and before the start of work, we will apply for a City of Cambridge Department of Public Works (DPW) Dewatering Permit.

Site Information

This NOI has been prepared for the discharge of dewatering effluent during construction of the proposed New Residence Hall located on Vassar Street within the MIT campus in Cambridge, Massachusetts (the Property; Fig. 1). The Property is currently occupied by the West Garage Building (Building W45) and the West Annex Lot (Fig. 2). The Property was historically used as an auto service center and sales facility from approximately 1934 until 1964, when the Garage was constructed.

The West Annex portion (i.e., western half) of the project site is a Massachusetts Department of Environmental Protection (MassDEP) disposal site tracked under Release Tracking Number (RTN) 3-30788 and related RTN 3-30886 (Fig. 2). The site was originally listed due to the presence of contaminants in soil to be excavated for installation of foundations for maintenance

GEI Consultants, Inc.
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buildings and associated utilities. During construction, three underground storage tanks (USTs) were encountered and removed. Massachusetts Contingency Plan (MCP; 310 CMR 40.00000) response actions are complete and the disposal site was closed in 2012 with a Permanent Solution (formerly Class A-2 Response Action Outcome [RAO]).

Some construction dewatering will be necessary to keep excavations dry. The intent of the project is to recharge groundwater on site. However, if this is not possible, it will be discharged to the nearby City of Cambridge storm water drainage system which discharges to the Charles River via Outfall D10OF0000 in accordance with the RGP permit.

Receiving Water Information

Receiving water quality data, collected by GEI on January 16, 2018 on behalf of MIT, was used in support of this NOI. A sample from the Charles River, the receiving water, was collected approximately 300 feet upstream of the Outfall D10OF0000. The results are summarized in Table 1 and the associated laboratory data report is in Appendix C. Receiving water temperature was obtained in the field and is noted on the effluent limitations input calculation page in Appendix A.

The seven-day-ten-year flow 7Q10 of the receiving water (Charles River) was established using the U.S. Geological Survey (USGS) StreamStats program and confirmed by the MassDEP on February 9, 2018. The StreamStats report, Dilution Factor calculations, and MassDEP confirmation of the 7Q10 and Dilution Factor are included in Appendix A. The 7Q10 of the Charles River is 24.7 ft^3/s and the Dilution Factor is 111.6.

The effluent limits were generated using the NPDES RGP NOI Dilution Factor Calculation spreadsheet. Copies of the "EnterData" and "FreshwaterResults" tabs from the spreadsheet are provided in Appendix A. The resulting calculated effluent limits are in Table 1.

Source Water Information

We evaluated the proposed influent by collecting a groundwater sample from the Site. The groundwater sample was collected from monitoring well B1(OW) on December 19, 2017 (Fig. 2) and submitted to ESS Laboratory, Inc. (ESS) of Cranston, Rhode Island for analysis of the parameters required under the NPDES RGP. In addition, the pH of the proposed influent was measured in the field to evaluate existing conditions. The results are in Table 2 and the associated laboratory data report for this sample are provided in Appendix D.

The analytical results indicated the presence of ammonia, chloride, acenaphthene (a polycyclic aromatic hydrocarbon (PAH) compound, and iron. The measured pH of the groundwater within the project site was approximately 6.9 standard units (s.u.). The pH range detected is within the RGP effluent limit for Massachusetts waters (6.5 to 8.3 s.u.).

Treatment System Information

During construction, the collected water will be treated to remove suspended solids using a sedimentation tank and bag filters. The proposed conceptual treatment system is shown in the process flow diagram in Fig. 3. Additional treatment may include granulated activated carbon (GAC), ion exchange, and pH adjustment, if necessary.

Although final products for additional treatment will be determined by the operator, example product information, including Safety Data Sheets (SDSs), associated hazards, and operation

recommendations, and product information for GAC and ion exchange systems adjustment are in Appendix A. These systems will be mobilized as necessary to achieve effluent limitations. If required, pH adjustment will consist of using a metered sulfuric acid (70-100%) system. Product information is in Appendix A. Sulfuric acid will be stored in 55-gallon drums with secondary containment systems. Procedures for proper handling and spill prevention are included in the site-specific Best Management Practices Plan. The addition of sulfuric acid to reduce pH levels is an established practice for temporary construction dewatering, and is not expected to exceed applicable effluent limits, water quality standards, or alter conditions in the receiving water. Therefore, it is our opinion, that no additional testing is necessary for use of sulfuric acid or to demonstrate that use of this product will adversely affect the receiving water.

Discharge Information

We anticipate treated effluent discharge rates to be about 50 gallons per minute (gpm) or less, with occasional peak flows of approximately 100 gpm during significant precipitation events. The treated water will be discharged to any of three storm drains immediately south of the Site on Vassar Street. The storm drains are identified in Fig. 2 and the plans in Appendix E as Proposed Discharge Points 1 through 3. According to plans we reviewed from the City of Cambridge DPW on February 9, 2018, these storm drains are part of the City of Cambridge storm water drainage system that discharge to an outfall (D10OF0000) at the Charles River, approximately 0.50 mile from the Site. An annotated copy of the Cambridge DPW plan showing the discharge path and ultimate discharge outfall at the Charles River is in Appendix E.

Endangered Species Act Eligibility

We reviewed the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation (IPAC) online database for the site and receiving water ("project action area"). A copy of the database report is in Appendix F. Based on this report, the project action area meets FWS Criterion A (i.e., no listed species or critical habitats are within the project action area).

National Historic Preservation Requirements

We reviewed online records from the U.S. National Register of Historic Places database and the Massachusetts Cultural Resource Information System (MACRIS). Maps of the Site and surrounding areas obtained from both databases are included in Appendix G. Based on the review, the Site is not a listed as a National Historic Place. Portions of the MIT campus have been inventoried by the Massachusetts Historic Commission; however, the site is not included in these areas.

The point where the discharge reaches the receiving water (i.e., Outfall D1OF0000 on the Charles River) is not listed as a National Historic Place. However, the Charles River Basin Historic District, where the outfall is located, is a listed National Historic Place, but includes buildings and structures on the banks of the Charles River, not the river itself. The inventory listing from the MACRIS database is included in Appendix G. Files related to the district have not yet been digitized on the National Register of Historic Places database.

Coverage Under NPDES RGP

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP based on the requirements of the NPDES RGP and our evaluation of the available site-specific information. The current intent of project dewatering activities is to recharge groundwater on site. However, if this is not possible, it will be discharged to the nearby storm water drainage

system after treatment. On behalf of MIT, we are requesting coverage under the NPDES RGP for the discharge of treated construction dewatering effluent to the surface waters of the Charles River via the City of Cambridge storm water drainage system.

The enclosed NOI form and supporting documentation provides required information on the general site conditions, discharge, treatment system, receiving water, and consultation with federal services (Appendices A through G). For this project, MIT is the owner and has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications. W.L. French Excavating, Corp. of North Billerica, Massachusetts, contracted by MIT, is the operator and will direct the personnel responsible for the implementation and day-to-day operations and activities that are necessary to ensure compliance with the NPDES RGP, including operation, inspection, monitoring, and reporting.

A Best Management Practice Plan (BMPP), including the project Storm Water Pollution Prevention Plan (SWPPP) and dewatering specification, to be implemented at the Site during construction dewatering, treatment, and discharge is in Appendix H.

Discharge of treated water is scheduled to begin in April 2018, although recharge to on-site recharge pits is planned if possible.

Please contact me at 781.721.4012 or igladstone@geiconsultants.com or Heather Ballantyne at 781.721.406 or hballantyne@geiconsultants.com if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.

Ileen S. Gladstone, P.E., LSP, LEED AP
Senior Vice President

Heather A. Ballantyne, P.G.
Project Manager

HBH:jam
Enclosures
c: Varin Ang, MIT
Stephanie O'Brien, Walsh Brothers
Surface Water Discharge Program, MassDEP

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Tables

Table 1. Chemical Testing Results - Groundwater
New Vassar Street Residence Hall
Massachusetts Institute of Technology
Cambridge, Massachusetts

				Sample Location:	**B1(OW)**
				Sample Date:	**11/1/2016**
				Screen Interval:	**4.2-19.2**
Analyte	**Method**	**Units**	**MCP RCGW-2**	**Site Specific Effluent Limits**	
Volatile Organic Compounds (VOCs)		ug/l			
Total BTEX	524.2		NS	100	ND
1,4-Dioxane	8270D-SIM			200	0.497
Total Non-Halogenated VOCs	524.2		NS	NS	ND
Total Halogenated VOCs	524.2		NS	NS	ND
Semivolatile Organic Compounds (SVOCs)	625 SIM	ug/l			
Total Phthalates			NS	190	ND
Acenapthene				NS	0.95
Total Group I PAHs			NS	1	0.95
Total Group II PAHs			NS	100	ND
Fuel Parameters					
Total Petroleum Hydrocarbons	1664A	ug/l	5,000	5,000	< 5,000
Ethanol	ASTM D3695	ug/l	NS	Report	< 10,000
Inorganic Compounds		ug/L			
Antimony	200.7		8,000	206	< 10.0
Arsenic	3113B		900	104	< 2.0
Cadmium	3113B		4	10.2	< 0.10
Chromium, Total	200.7		300	NS	< 10.0
Chromium III	200.7		600	323	< 10.0
Chromium VI	3500Cr B-2009		300	323	< 4.0
Copper	200.7		100,000	242	< 4.0
Cyanide	200.7		30	178	< 5.0
Iron	200.7		NS	5,000	5450
Lead	245.1		10	160	< 4.0
Mercury	200.7		20	0.739	< 0.200
Nickel	3113B		200	1,450	< 10.0
Selenium	200.7		100	235.8	< 4.0
Silver	200.7		7	35.1	< 1.0
Zinc	4500CNCE		900	420	< 10.0
Pesticides					
1,2-Dibromomethane	504.1	ug/l	2	0	< 0.015
Polychlorinated Biphenlyls (PCBs)	608	ug/l			
Total PCBs			5	0.5	< 0.09
Other					
Ammonia as Nitrogen	350.1	mg/L	NS	Report	3.19
Chloride	300	mg/L	NS	Report	995
Phenols	420.1	ug/l	NS	nS	< 100
Hardness	200.7	ug/l	NS	NS	406000
Total Residual Chloride	4500CL D	ug/l	NS	200	< 20.0
Total Suspended Solids	2540D	mg/l	NS	30,000	18
Temperature	Field	Deg C	NS	NS	14.3
pH	Field	S.U.	NS	6.5 to 8.3	6.9

General Notes:

1. For a complete list of analytes, see the laboratory data sheets.
2. "<" = Analyte not detected at a concentration above the laboratory reporting limit.
3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective April 25, 2014
4. RCGW-2 = Reportable Concentration for category GW-2 Groundwater
5. µg/l = micrograms per liter.
6. mg/l = milligram per liter
7. deg C = Degrees Celsius
8. S.U. = standard units
9. Dilution Factor of 111 used to establish effluent limits.
10. Effluent limits calculated using NPDES RGP NOI Dilution Factor Spreadsheet.
11. Temperature and pH were measured in the field.

Table 2. Chemical Testing Results - Receiving Water (Charles River)
New Vassar Street Residence Hall
Massachusetts Institute of Technology
Cambridge, Massachusetts

		Sample Location:	**SW-1**
		Sample Date:	**11/1/2016**
		Screen Interval:	**4.2-19.2**
Analyte	**Method**	**Units**	
Total Metals		ug/l	
Iron	200.7		702
Other			
Hardness	200.7	ug/l	66700
Ammonia as Nitrogen	350.1	ug/l	0.2
pH	9040	S.U.	6.77

General Notes:

1. Only analytes detected in at least one sample are reported here. For a complete list of analytes, see the laboratory data sheets.
2. "<" = Analyte not detected at a concentration above the laboratory reporting limit.
3. µg/l = micrograms per liter.

Figures

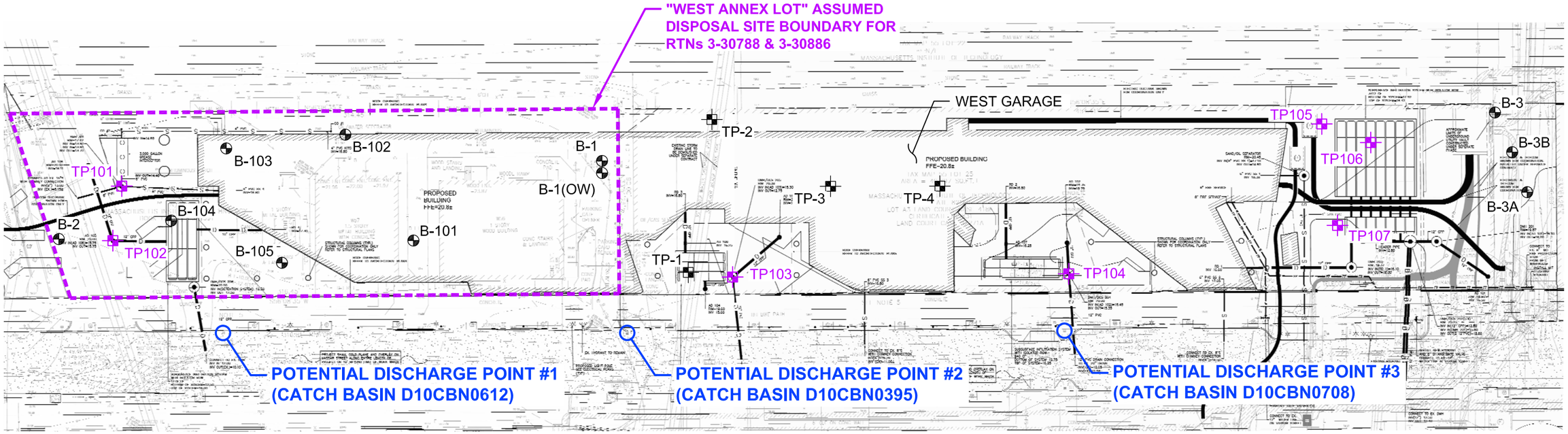
0 1000 2000 4000 6000

SCALE, FEET

This Image provided by MassGIS is from U.S.G.S. Topographic
7.5 X 15 Minute Series
Boston South, MA Quadrangle, 1987.
Datum is National Geodetic Vertical Datum of 1929 (NGVD29).
Contour Interval is 3 Meters.

NPDES RGP Notice of Intent New Vassar Street Residence Hall Cambridge, Massachusetts	GEI Consultants	SITE LOCATION MAP
Massachusetts Institute of Technology Cambridge, Massachusetts	Project 1701323	March 2018 Fig. 1

B:\Working\MIT\1701323 MIT Vassar Street Residence Hall\00_CAD\Figures\NPDES noi\1701323-03



LEGEND:

TEST PIT, GEI 2018

BORING, GEI 2017
(OW) INDICATES OBSERVATION WELL INSTALLED

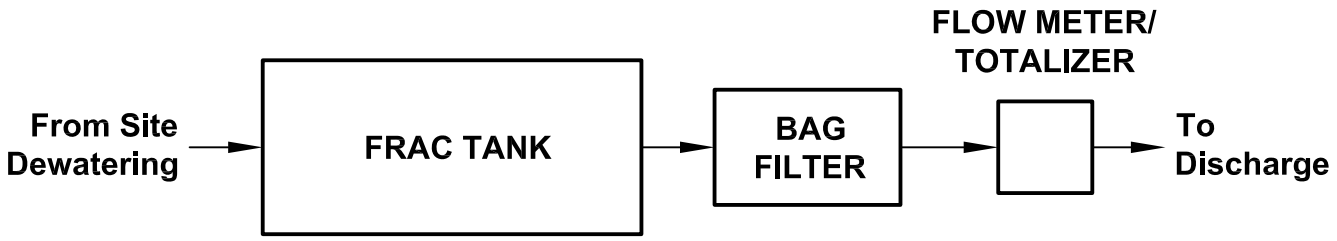
TEST PIT, GEI 2017

0 50 100
Approximate Scale, Feet

NOTES:

1. BASE PLAN FROM *"NEW VASSAR ST DORMITORY, 125 VASSAR STREET CAMBRIDGE, MA, SITE UTILITY PLAN,"* SHEETS C-101A AND C-101B PROVIDED BY DiMELLA SHAFFER AND DATED 11/17/17.

NPDES RGP Notice of Intent New Vassar Street Residence Hall Cambridge, Massachusetts	GEI Consultants	SUBSURFACE EXPLORATIONS PLAN
Massachusetts Institute of Technology Cambridge, Massachusetts	Project 1701323	March 2018 Fig. 2



PROCESS FLOW DIAGRAM

Not to Scale

NPDES RGP Notice of Intent New Vassar Street Residence Hall Cambridge, Massachusetts	GEI Consultants	PROCESS FLOW DIAGRAM
Massachusetts Institute of Technology Cambridge, Massachusetts	Project 1701323	March 2018 Fig. 3

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Appendix A

Remediation General Permit

Notice of Intent

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

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
New Vassar Street Residence Hall</td><td colspan="3">Site address: 125 and 169 Vassar Street
Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02139</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">Contact Person: Phyllis Carter</td></tr>
<tr><td colspan="2">Telephone: 617.452.2508</td><td>Email: pcarter@mit.edu</td></tr>
<tr><td colspan="3">Mailing address:
Street: 77 Massachusetts Avenue
Building N52-496</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02139</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
W.L. French</td><td colspan="3">Contact Person: Gary Morrison</td></tr>
<tr><td colspan="2">Telephone: (617) 924-1234</td><td>Email: gmorrison@wlfrench.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 3 Survey Circle</td></tr>
<tr><td>City: North Billerica</td><td>State: MA</td><td>Zip: 01862</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
■ MA Chapter 21e; list RTN(s):
3-30788 and 3-30886
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Charles River	MA72-38	B

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

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

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

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. Impaired water body - see attached Table 1 for impairment pollutants and completed TMDLs

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.	24.7 cfs
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.	111

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: 02/09/2018

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

C. Source water information:

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

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

2. Source water contaminants: Groundwater at former MassDEP disposal site for petroleum contamination (RTNs 3-30788 and 3-30886)	
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): D10OF0000	Outfall location(s): (Latitude, Longitude) 42.35567 degrees N 71.09638 degrees W
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ■ No, if so, explain, with an estimated timeframe for obtaining permission: This NOI will be submitted electronically for a City of Cambridge Dewatering Discharge Permit concurrent with this NOI. 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): April 2018 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

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

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✔	2	350.1	0.10	3.19	1.70	Report mg/L	---
Chloride		✔	1	300.0	0.5	0.995	0.995	Report µg/l	---
Total Residual Chlorine	✔		1	4500CLD	20.0	< 20.0	0	0.2 mg/L	
Total Suspended Solids		✔	1	2540D	0.005	0.018	0.018	30 mg/L	---
Antimony	✔		1	200.7	10.0	< 10.0	0	206 µg/L	
Arsenic	✔		1	3113B	2.0	<2.0	0	104 µg/L	
Cadmium	✔		1	3113B	0.10	< 0.10	0	10.2 µg/L	
Chromium III	✔		1	200.7	10.0	<10.0	0	323 µg/L	
Chromium VI	✔		1	3500Cr	4.0	<4.0	0	323 µg/L	
Copper	✔		1	200.7	4.0	< 4.0	0	242 µg/L	
Iron		✔	2	200.7	20.0	5450	3076	5,000 µg/L	
Lead	✔		1	200.7	4.0	< 4.0	0	160 µg/L	
Mercury	✔		1	245.1	0.200	< 0.200	0	0.739 µg/L	
Nickel	✔		1	200.7	10.0	< 10.0	0	1,450 µg/L	
Selenium	✔		1	3113B	4.0	< 4.0	0	235.8 µg/L	
Silver	✔		1	200.7	1.0	< 1.0	0	35.1 µg/L	
Zinc	✔		1	200.7	10.0	< 10.0	0	420 µg/L	
Cyanide	✔		1	4500CNC	5.0	<5.0	0	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX	✔		1	524.1	0.5	< 0.5	0	100 µg/L	---
Benzene	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	---
1,4 Dioxane		✔	1	8270D-SI	0.230	0.497	0.497	200 µg/L	---
Acetone	✔		1	524.2	5.0	< 5.0	0	7.97 mg/L	---
Phenol	✔		1	420.1	100	<100	0	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	524.2	0.3	< 0.3	0	4.4 µg/L	
1,2 Dichlorobenzene	✔		1	524.2	0.5	< 0.5	0	600 µg/L	---
1,3 Dichlorobenzene	✔		1	524.2	0.5	< 0.5	0	320 µg/L	---
1,4 Dichlorobenzene	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	---
Total dichlorobenzene	✔		1	524.2	0.5	< 0.5	0	763 µg/L in NH	---
1,1 Dichloroethane	✔		1	524.2	0.5	< 0.50	0	70 µg/L	---
1,2 Dichloroethane	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	---
1,1 Dichloroethylene	✔		1	524.2	0.5	< 0.5	0	3.2 µg/L	---
Ethylene Dibromide	✔		1	504.1	0.015	< 0.015	0	0.05 µg/L	---
Methylene Chloride	✔		1	524.2	0.5	< 0.5	0	4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	524.2	0.5	< 0.5	0	200 µg/L	---
1,1,2 Trichloroethane	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	---
Trichloroethylene	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	---
Tetrachloroethylene	✔		1	524.2	0.5	< 0.5	0	5.0 µg/L	
cis-1,2 Dichloroethylene	✔		1	524.2	0.5	< 0.5	0	70 µg/L	---
Vinyl Chloride	✔		1	524.2	0.5	< 0.5	0	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	625SIM	2.34	< 2.34	0	190 µg/L	
Diethylhexyl phthalate	✔		1	625SIM	2.34	< 2.34	0	101 µg/L	
Total Group I PAHs	✔		1	625SIM	0.05	< 0.05	0	1.0 µg/L	---
Benzo(a)anthracene	✔		1	625SIM	0.05	< 0.05	0	As Total PAHs	
Benzo(a)pyrene	✔		1	625SIM	0.05	< 0.05	0		
Benzo(b)fluoranthene	✔		1	625SIM	0.05	< 0.05	0		
Benzo(k)fluoranthene	✔		1	625SIM	0.05	< 0.05	0		
Chrysene	✔		1	625SIM	0.05	< 0.05	0		
Dibenzo(a,h)anthracene	✔		1	625SIM	0.05	< 0.05	0		
Indeno(1,2,3-cd)pyrene	✔		1	625SIM	0.05	< 0.05	0		

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 SIM	0.19	< 0.05	0	100 µg/L	---
Naphthalene	✔		1	625 SIM	0.19	< 0.19	0	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608	0.09	<0.09	0	0.000064 µg/L	---
Pentachlorophenol	✔		1	625 SIM	0.84	<0.84	0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		1	1664A	0.005	<0.005	0	5.0 mg/L	---
Ethanol	✔		1	D3695	0.010	< 0.010	0	Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	524.2	0.5	< 0.5	0	70 µg/L	
tert-Butyl Alcohol	✔		1	524.2	25	<25.0	0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	524.2	1.0	< 1.0	0	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	9040	NA	6.77 S.U.	6.77 S.U.		
Temp			1	NA	NA	32.8 deg F	32.8 deg F		
Hardness	✔		2	200.7	82.4	406	269.7		

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:
Granulated activated carbon, ion exchange, and other treatments as need to meet effluent limits.

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Prior to discharge, dewatering effluent will be routed through a fractionation tan, bag filters, and other treatment as need to meet effluent requirements. See attached Figure 3.

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: Granulated activated carbon, ion exchange, and other treatments as need to meet effluent limits.

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: Flowmeter Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	250
Provide the proposed maximum effluent flow in gpm.	100
Provide the average effluent flow in gpm.	50
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	NA

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

F. Chemical and additive information

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

☐ Algaecides/biocides ☐ Antifoams ☐ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ☐ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ■ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ■ Other; if so, specify:
pH conditions may be added to the treatment system if necessary to meet effluent limits

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.

See attached letter report prepared by GEI.

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

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

J. Certification requirement

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

BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented on the Site.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ■ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature:	Date: March 15, 2018
Print Name and Title: J. Gary Morrissey Senior Project Manager	

J. Certification requirement

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

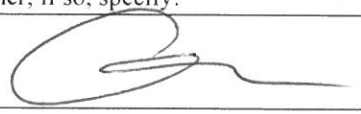
BMPP certification statement: A BMPP meeting the requirements of this general permit will be implemented on the Site.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ■ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: 	Date: 3/19/18
Print Name and Title: Tolga Burak, Managing Director MIT EHS	

Table 1. Water Quality Assessment Status for Reporting Year 2014
Charles River

Designated Use	Designated Use Group	Status
Aesthetic	Aesthetic Value	Impaired
Fish Consumption	Aquatic Life Harvesting	Impaired
Fish, Other Aquatic Life And Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Impaired
Primary Contact Recreation	Recreation	Impaired
Secondary Contact Recreation	Recreation	Impaired

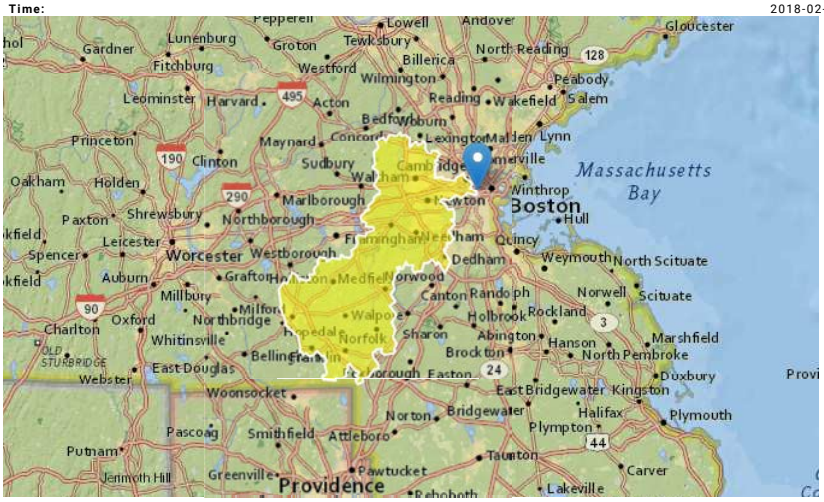
Causes of Impairment for Reporting Year 2014

Cause of Impairment	Cause of Impairment Group	Designated Use(s)	State TMDL Development Status
Chlorophyll-A	Algal Growth	Fish, Other Aquatic Life And Wildlife	TMDL completed
Combined Biota/Habitat Bioassessments (Streams)	Cause Unknown - Impaired Biota	Fish, Other Aquatic Life And Wildlife	TMDL needed
DDT	Pesticides	Fish Consumption	TMDL needed
Dissolved Oxygen	Organic Enrichment/Oxygen Depletion	Fish, Other Aquatic Life And Wildlife	TMDL needed
Dissolved Oxygen Saturation	Organic Enrichment/Oxygen Depletion	Fish, Other Aquatic Life And Wildlife	TMDL needed
Escherichia Coli (E. Coli)	Pathogens	Primary Contact Recreation	TMDL needed
Excess Algal Growth	Algal Growth	Fish, Other Aquatic Life And Wildlife, Secondar	TMDL completed
Nutrient/Eutrophication Biological Indicators	Nutrients	Fish, Other Aquatic Life And Wildlife	TMDL completed
Oil and Grease	Oil and Grease	Aesthetic	TMDL needed
Other Flow Regime Alterations	Flow Alteration(s)	Fish, Other Aquatic Life And Wildlife	Non-pollutant impairment
PCB(s) in Fish Tissue	Polychlorinated Biphenyls (PCBs)	Fish Consumption	TMDL needed
Phosphorus, Total	Nutrients	Fish, Other Aquatic Life And Wildlife	TMDL completed
Salinity	Salinity/Total Dissolved Solids/Chlorides/Sulfates	Fish, Other Aquatic Life And Wildlife	TMDL needed
Secchi Disk Transparency	Turbidity	Secondary Contact Recreation, Fish, Other Aqu	TMDL completed
Sediment Screening Value (Exceedance)	Total Toxics	Fish, Other Aquatic Life And Wildlife	TMDL needed
Taste and Odor	Taste, Color and Odor	Aesthetic	TMDL completed
Temperature, Water	Temperature	Fish, Other Aquatic Life And Wildlife	TMDL needed

General Notes:
1. Information obtained from USGS website: https://maps.waterdata.usgs.gov/mapper/index.html on February 9, 2018.

StreamStats Report

Region ID:	MA
Workspace ID:	MA20180208154138831000
Clicked Point (Latitude, Longitude):	42.35382, -71.09489
Time:	2018-02-08 10:41:57 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	283	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.326	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.23	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	283	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.326	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.23	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	49.6	ft^3/s
7 Day 10 Year Low Flow	24.7	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/)

Remediation General Permit – Notice of Intent

Dilution Factor Calculation

Purpose and Approach:

Calculate the Dilution Factor (DF) for project based on 7 Day 10 Year (7Q10) Low Flow values and EPA formula:

DF = (Qd + Qs)/Qd where: Qd = Maximum flow rate of discharge in cubic feet per second (cfs)

Qs = Receiving water 7Q10 flow in cfs

Assumptions:

1. 7Q10 is 24.7 cfs (from StreamStats 4.0)
2. A conversion of 7.48 is used to convert cubic feet to gallons.
3. A design discharge flowrate of 100 gpm is assumed.

Calculations:

7Q10 Low Flow value (Qs):

$$Qs = \frac{24.7\ ft3}{S}\ X\ \frac{7.48\ gal}{ft3}\ X\ \frac{86{,}400\ s}{day}\ X\ \frac{1\ MG}{1{,}000{,}000\ gallons}$$

$$Qs = 15.92\ MGD$$

Discharge Flow Rate (Qd):

$$Qd = \frac{100\ gallons}{min} X\ \frac{1{,}440\ min}{day}\ X\ \frac{1MG}{1{,}000{,}000\ gallons}$$

$$Qd = 0.144\ MGD$$

Dilution Factor (DF):

$$DF = \frac{Qs + Qd}{Qd} = \frac{15.92\ MGD + 0.144\ MG}{0.144\ MGD} = 111$$

Ballantyne, Heather

From: Ruan, Xiaodan (DEP) <Xiaodan.Ruan@MassMail.State.MA.US>
Sent: Friday, February 9, 2018 3:58 PM
To: Ballantyne, Heather
Cc: Vakalopoulos, Catherine (DEP)
Subject: RE: NPDES RGP NOI - 7Q10

Thank you Heather!

I can confirm that the 7Q10 of 24.7 cfs (15.92 MGD) and using a design flow of 100 gpm, the dilution factor (DF) is 111 are correct.

The receiving water Charles River is not listed as Outstanding Resource Waters, therefore you are all set from DEP. Please either attach this email to the NOI or add today's date where you indicate that you have consulted with MassDEP on the NOI. This will be helpful when EPA reviews the NOI.

Please let us know if you have any further questions. Have a good weekend!

Thanks,
Xiaodan

From: Ballantyne, Heather [mailto:hballantyne@geiconsultants.com]
Sent: Friday, February 09, 2018 3:51 PM
To: Ruan, Xiaodan (DEP)
Subject: RE: NPDES RGP NOI - 7Q10

Hi Xiaodan,

The 100 gpm is the max flow rate for the system. We expect 50 gpm for typical daily flow.

Thanks,
Heather

Heather A. Ballantyne, P.G.
Project Manager
GEI Consultants
GEI Consultants, Inc.
400 Unicorn Park Drive | Woburn, MA 01801
T: 781.721.4063 | **M:** 857.345.2100
www.geiconsultants.com | vCard | map | LinkedIn | Twitter | Facebook

From: Ruan, Xiaodan (DEP) [mailto:Xiaodan.Ruan@MassMail.State.MA.US]
Sent: Friday, February 9, 2018 3:39 PM
To: Ballantyne, Heather <hballantyne@geiconsultants.com>

Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Subject: RE: NPDES RGP NOI - 7Q10

Hi Heather,

Could you please confirm if the max flow rate of 100 gpm is the design flow? The design flow in the RGP is defined as flow though the component in the treatment system with the most restricted flow.

Thanks,
Xiaodan

From: Ballantyne, Heather [mailto:hballantyne@geiconsultants.com]
Sent: Friday, February 09, 2018 2:08 PM
To: Ruan, Xiaodan (DEP)
Cc: Vakalopoulos, Catherine (DEP)
Subject: RE: NPDES RGP NOI - 7Q10

Hi Xiaodan!

Thank you so much for your help yesterday. I rechecked and the 7Q10 of 24.7 cfs was correct for the outlet. Dilution Factor calculation is attached for your review.

Thank you and Have a great weekend!
Heather

Heather A. Ballantyne, P.G.
Project Manager
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From: Ruan, Xiaodan (DEP) [mailto:Xiaodan.Ruan@MassMail.State.MA.US]
Sent: Friday, February 9, 2018 10:28 AM
To: Ballantyne, Heather <hballantyne@geiconsultants.com>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Subject: RE: NPDES RGP NOI - 7Q10

Hi Heather,

Just wanted to follow up with you about the 7Q10.

Thanks for the report. In the report you sent, the 7Q10 was 29.2 cfs. But the 7Q10 in the report I sent to you in the last email was 24.7 cfs. Could you please check again the outlet location and click on the point on the center blue line where it is the closest to the discharging point. I can check the DF calculation for you when it's ready.

Thanks,

Xiaodan

From: Ballantyne, Heather [mailto:hballantyne@geiconsultants.com]
Sent: Thursday, February 08, 2018 11:12 AM
To: Ruan, Xiaodan (DEP)
Subject: FW: NPDES RGP NOI - 7Q10

Heather A. Ballantyne, P.G.
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From: Ballantyne, Heather
Sent: Thursday, February 8, 2018 11:11 AM
To: Ballantyne, Heather <hballantyne@geiconsultants.com>
Subject: RE: NPDES RGP NOI - 7Q10

Xiaodan,

Does this report make more sense for our site?

Heather A. Ballantyne, P.G.
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From: Ballantyne, Heather
Sent: Thursday, February 8, 2018 10:54 AM
To: 'Ruan, Xiaodan (DEP)' <Xiaodan.Ruan@MassMail.State.MA.US>
Subject: RE: NPDES RGP NOI - 7Q10

Hi Xiaodan,

Thanks for getting back to me. Yes, I also assumed it was within the Lower Charles Basin, but when I click on the outfall near Endicott Street, I wasn't able to generate a basin. I'm not sure what I am doing wrong in the program? Any advice?

Thanks,
Heather

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www.geiconsultants.com | vCard | map | LinkedIn | Twitter | Facebook

From: Ruan, Xiaodan (DEP) [mailto:Xiaodan.Ruan@MassMail.State.MA.US]
Sent: Thursday, February 8, 2018 10:52 AM
To: Ballantyne, Heather <hballantyne@geiconsultants.com>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Subject: RE: NPDES RGP NOI - 7Q10

Hi Heather,

It looks to us that the outfall to the Charles River off Endicott Street is within the Lower Charles River Basin. Please try again using the center blue line on the Lower Charles River Basin near the outfall location to delineate. If you still have trouble generating a report, please let me know.

Thanks,
Xiaodan

From: Vakalopoulos, Catherine (DEP)
Sent: Thursday, February 08, 2018 10:31 AM
To: Ballantyne, Heather
Cc: Ruan, Xiaodan (DEP)
Subject: RE: NPDES RGP NOI - 7Q10

Here is Heather's second message Xiaodan...

From: Ballantyne, Heather [mailto:hballantyne@geiconsultants.com]
Sent: Wednesday, February 07, 2018 8:03 PM
To: Vakalopoulos, Catherine (DEP)
Subject: FW: NPDES RGP NOI - 7Q10

Hi Catherine,

I was able to generate this report after my initial email using the New Dam as a center point. The basin generated includes my project site. Is this appropriate to use for the 7Q10 value?

Thanks,
Heather

Enter number values in green boxes below

Enter values in the units specified

↓

15.92	Q_R = Enter upstream flow in **MGD**
0.144	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

111

Enter values in the units specified

↓

406	C_d = Enter influent hardness in **mg/L** $CaCO_3$
66.7	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

6.77	pH in **Standard Units**
18	Temperature in **°C**
0.2	Ammonia in **mg/L**
66.7	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
702	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
3.19	Ammonia in **mg/L**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
0	Copper in **µg/L**
5450	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
0	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Notes:

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor approved
Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry
Discharge flow is equal to the design flow or 1 MGD, whichever is less
Only if approved by State as the entry for Q_R; leave 0 if no entry

Saltwater (estuarine and marine): only if approved by the State
Leave 0 if no entry

Freshwater only

pH, temperature, and ammonia required for all discharges
Hardness required for freshwater
Salinity required for saltwater (estuarine and marine)
Metals required for all discharges if present and if dilution factor is > 1
Enter 0 if non-detect or testing not required

if >1 sample, enter maximum
if >10 samples, may enter 95th percentile
Enter 0 if non-detect or testing not required

Dilution Factor	111.6					
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	1227	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	71396	µg/L		
Arsenic	**104**	µg/L	1116	µg/L		
Cadmium	**10.2**	µg/L	23.1152	µg/L		
Chromium III	**323**	µg/L	7156.7	µg/L		
Chromium VI	**323**	µg/L	1275.6	µg/L		
Copper	**242**	µg/L	764.9	µg/L		
Iron	**5000**	µg/L	33946	µg/L		
Lead	**160**	µg/L	224.34	µg/L		
Mercury	**0.739**	µg/L	101.06	µg/L		
Nickel	**1450**	µg/L	4289.9	µg/L		
Selenium	**235.8**	µg/L	557.8	µg/L		
Silver	**35.1**	µg/L	227.1	µg/L		
Zinc	**420**	µg/L	9849.1	µg/L		
Cyanide	**178**	mg/L	580.1	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	33467	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	178.5	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	368.1	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	245.4	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.4239	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.4239	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	2231	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

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- Membrane Filtration
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- Ozone
- Pressure Filtration
- Screens
- Separators/Strainers
- Tanks

Bag Filters / Accugaf Filter Bags

Accugaf filter bags are constructed from FDA compliant materials. They are ideal for food processing applications and will filter particulate from 1 micron to 25 microns with 99% efficiency..

Related Product Links
Accugaf Filter Bags | Duragaf Filter Bags | Hayflow Filter Element | Lofclear Filter Bags | Nylon & Polyester Mesh | Progaf Filter Bags | Sentinel® Filter Bags & Seal | Snap Ring Filtration Media Overview

ACCUGAF™, Filter Bags for Applications Demanding Efficiency >99%

The ACCUGAF filter bag pushes the boundaries of bag filtration technology far beyond traditional designs. With efficiencies >99%, each A model provides cost-effective filtration solutions for demanding applications. The five models assure users that particles from the range of can be removed effectively while delivering long service life.

Material	Filter Model	Buy Now	Particle Size at Common Removal Efficiencies (µm)					ΔP (psi) Size 02 @ 45 gpm
			>60%	>90%	>95%	>99%	>99.9%	
Polypropylene	AGF 51		0.2	0.6	0.8	1.5	5	1.30
	AGF 53		0.8	1	2	3	5	3.20
	AGF 55		1	2	3	5	15	0.73
	AGF 57		2	4	5	10	25	0.60
	AGF 59		10	25	30	25	35	0.44
Polyester	AGFE 51		0.2	0.6	0.8	1.5	5	1.30
	AGFE 55		1	2	3	5	15	0.73
	AGFE 57		2	4	5	10	25	0.60

High-Efficiency Performance

ACCUGAF filter bags feature:

- 100% welded seams
- Patented SENTINEL® seal ring
- Meltblown filtration media in polypropylene or polyester
- No additives, such as resins, binders or surface treatments

FDA Compliant Materials

ACCUGAF Polypropylene filter bags are constructed entirely of materials compliant to FDA requirements for materials in contact with food materials conform to US Code of Federal Regulations 21 CFR Part 177 and EU Directive 2002/72/EC.

Applications

Although ideally suited for food and beverages, ACCUGAF filter bags will deliver equal performance in a wide range of demanding applica as:

- Beer, wine, spirits and beverage filtration
- Fine particle removal in parts cleaning
- Final filtration of lacquers
- Final filtration of vinegar
- Activated carbon removal in process systems
- Final filtration of hydraulic oils and lubricants

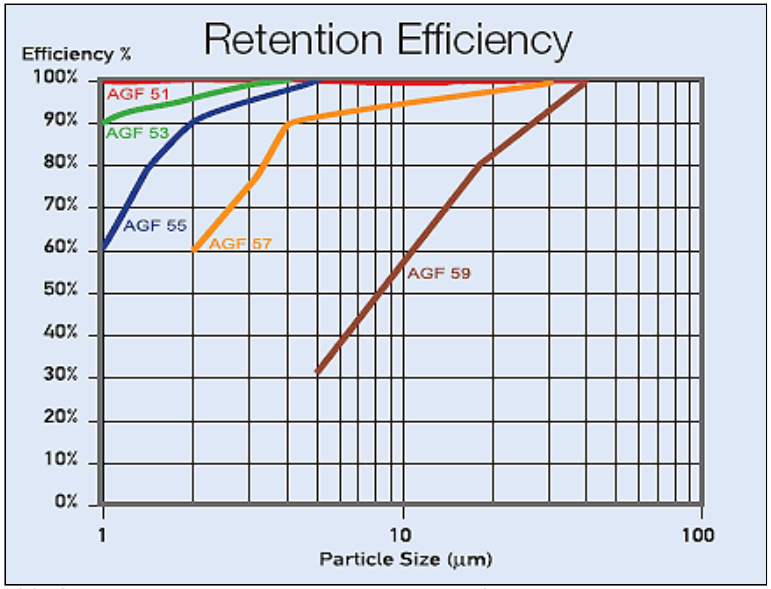
OPERATIONALCONSIDERATIONS

Bag Positioner

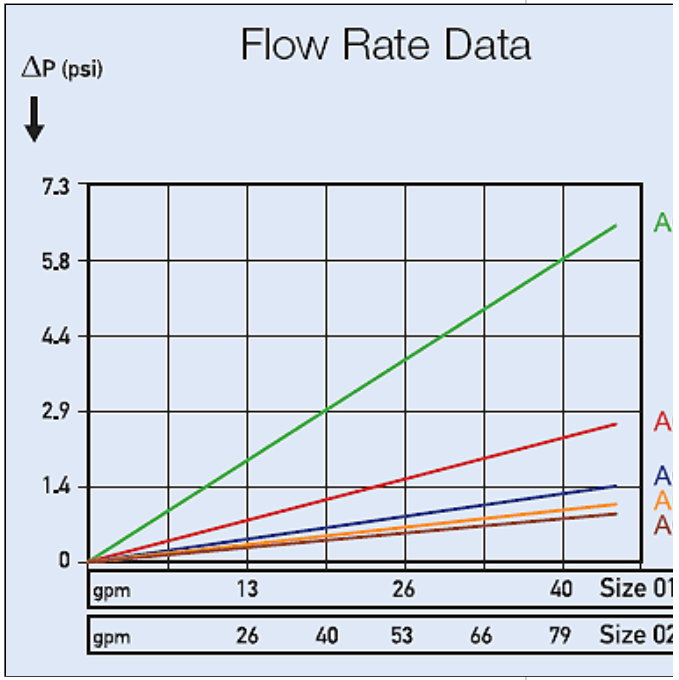
ACCUGAF filter bags must be used with the Eaton bagpositioner. This eases insertion and assures correct alignment of the filter bag inside the restrainer basket. In addition, the be protected against damage to inadvertent back-flow.

Pre-Wetting in Aqueous Solutions

ACCUGAF polypropylene filter bags are fabricated from microfiber filtration media. These materials are hydro-phobic, indicating that water will not wet the fiber surfaces.As will a polypropylene filters, a lower surface tension fluid (wetting agent) must be used to wet the media prior to introducing water. Prior to service, the filter bags must be immersed in a solution compatible with the process fluid. After wetting, an aqueous fluid will be drawn into the media through capillary action. Full details about installation and wetting are prov every box of ACCUGAF filter bags.



ACCUGAF Filter Bags are available in retention codes of 51,53,55,57,and 59.To select the perfect ACCUGAF Filter Bag for your application use the chart and choose the retention efficiency level you need on the left side (Y Axis) of the chart at the particle size in microns at the bottom (X Axis) .Next find which bag efficiency code (identified by the colored lines) is closest to that point.Thsi will assist you in finding the most cost effective filter bag for your critical filtration application.



BAG FILTER PRODUCT CODE EXPLANATION

ACCUGAF™ AGF: polypropylene melt-blown AGFE: polyester melt-blown		E: Polypropylene Mesh R: Polyester Mesh		E: PP SENTINEL® Ring H: Hytrel SENTINEL® Ring		Bags/Box Box Size (inc 01/02 10M 19 x 12
AGF Bag Material	- **53** Micron Rating µm	**E** Bag Cover Layer	**02** Bag Size	**E** Collar/Ring Type	- **O** Bottom Shape	- **10M** Packagi

AGF	AGFE
51	51
53	-
55	55
57	57
59	-

Code	Size	Area
01	ø 7 x 17 inches L	2.6 sqft
02	ø 7 x 32 inches L	5.2 sqft

round bottom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- Odor Control
- Petrochemical Industry
- Poultry Industry

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- Activated Carbon
- Bag Filtration
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- Dewatering
- Evaporators
- Membrane Filtration
- Microbial Bacteria
- Oil/Water Separators
- Ozone
- Pressure Filtration

Bag Filter Media / Lofclear Absolute Rate Oil Removal Filter Bags

Accugaf filter bags are constructed from FDA compliant materials. They are ideal for food processing applications and will filter particulate from 1 micron to 25 microns with 99% efficiency..

Related Product Links
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LOFCLEAR: Cost Effective Filter Bags for Absolute Filtration Applications

A pleated prefilter provides a very large surface (about 32 sq ft) to collect

LOFCLEAR filter bags now make absolute filtration viable in many applications where only standard bags could be used due to cost constraints. Made from 100% pure polypropylene materials compliant with food requirements, LOFCLEAR filter bags contain no leachables or lubricants such as silicone oils. In addition, their excellent oil adsorbancy makes LOFCLEAR filter bags ideally suited to the oil removal needs of the paint and coatings industries.

LOFCLEAR™Filter Bag Filtration Ratings

Filter Model	Particle Size at Common Removal Efficiencies (µm)					ΔP (psi) Size 02 @ 45 gpm
	Buy Now	>60%	>90%	>95%	>99%	
113/123		0.5	1	2	4	0.36
114/124		0.75	2	3	5	0.30
115/125		1.5	3.5	8	10	0.15
116/126		2	6	13	15	<0.15
118/128		25	35	37	40	<0.15
119/129		15	25	27	30	<0.15
130		6	14	15	20	0.72
135		1	6	8	10	0.29
522		0.5	1	1.5	2.6	1.45
525		1	2	3.5	6	0.26
527		2	5	9	13	0.15
529		10	20	23	32	<0.15

Two Series to Match Filters to Applications

- Screens
- Separators/Strainers
- Tanks

gels and solids before it reaches the final filter layers.

LOFCLEAR filter bags are available in two styles, Series100 and Series 500. These two styles make it possible to match the requirements of a wide range of applications, depending on the needs for efficiency and long life. The Series 100 filters use a multi-layer construction for applications where high efficiency is of prime importance. The Series 500 filters utilize a patent pending pleated construction to increase surface area for applications requiring high dirt capacities and long life.

Perfect for Removal of Gelatinous Materials

LOFCLEAR filter bags have proven to be highly effective in the removal of gelatinous contaminants. The combination of deep micro fiber filtration media breaks up gels and retains them within the media depth. These features prevent surface blockage and breakthrough typical of standard filter bag materials.

LOFCLEAR™Series 100 Filter Bags

LOFCLEAR Series 100 Filter Bags feature a proven three layer construction with a sewn filter welded to the SENTINEL® seal. They feature efficiencies >99% over a wide range of particle sizes, with dirt capacities up to 1/2pound. The seven models feature:

• Polypropylene pre filter
• Meltblown polypropylene microfiber final filter
• Polypropylene outer migration barrier

LOFCLEAR Series 100 filter bags are an excellent choice for application such as high purity fluids with low particulate concentration, first pass guard filtration, oil adsorption and activated carbon removal.

The LOFCLEAR 128 and 129 were especially developed for the filtration of electro-coatings in the automotive industry. The filtration design allows pigments to pass through the filtration layers, while retaining impurities and removing silicones and other crater forming substances.The LOFCLEAR 130 filter bag adds extra adsorption capacity for retaining high amounts of oils or other crater forming substances. The LOFCLEAR 135 delivers high removal of particulate and oils for clear coat applications where pigment removal is not an issue.

LOFCLEAR™Series 500 Filter Bags

LOFCLEAR Series 500 Filter Bags have an all welded multi-pleated construction for high efficiency and long life. This series of bags has a pleated prefiltration layer and a complex design of final filtration layers, allowing the removal of difficult to filter gels and deformable particles with a high capacity of solids loading. The outer web covering eliminates any downstream fiber migration.

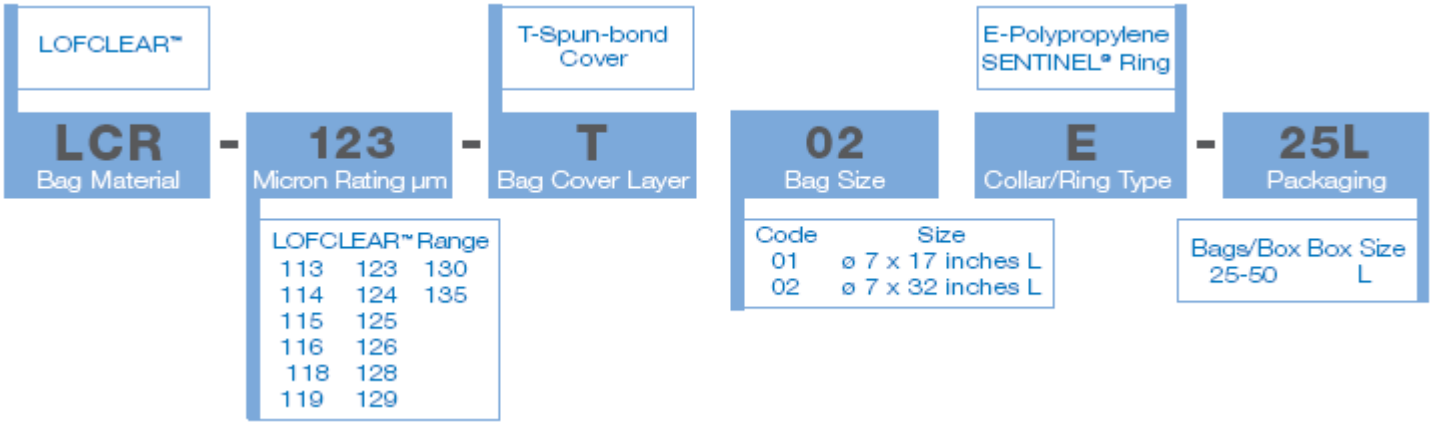
LOFCLEAR Series 500 Filter Bags are available in four different efficiency ratings so you can choose your exact required filtration efficiency. LOFCLEAR Filter Bags have filtration efficiencies from 95 to 99%, with a dirt holding capacity of over 2 pounds.

Among the many applications for LOFCLEAR Series 500 Filter Bags are oils, slurries, dilute oil removal, re-circulating batch systems, and systems with heavy contamination.

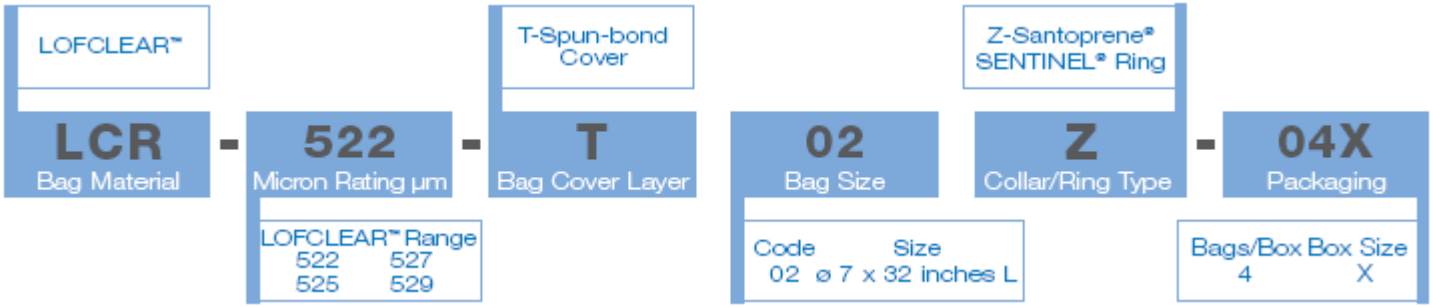
Operational Considerations

LOFCLEAR Series 500 Filter Bags must be used with a bag positioner. This eases insertion and assures correct alignment of the filter bag inside the restrainer basket. In addition, the positioner protects the filter bag from potential damage that could be caused by inadvertent back flow.

LOFCLEAR 100 SERIES BAG FIL TER PRODUCT CODE EXPLANATION



LOFCLEAR 500 SERIES BAG FIL TER PRODUCT CODE EXPLANATION



Activated Carbon | Aeration | Air Treatment | Bag Filters & Housings| Chemicals | Dissolved Air Flotation | Dust Collection | Evaporators | Filter Presses | Flocculation | Inline Filter Vessels | Membrane Filtration | Odor Control |Ozone | Oil Water Separators | Sewage Systems | Liquid and Vapor Phase Vessels | Wet Scrubbers | Careers

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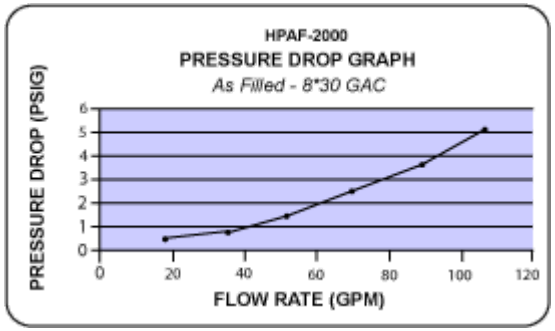
- Oil/Water Separators
- Ozone
- Pressure Filtration
- Screens
- Separators/Strainers

General Description

The HPAF-2000 filter is a media filter vessel designed to treat liquid streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. Some applications include:

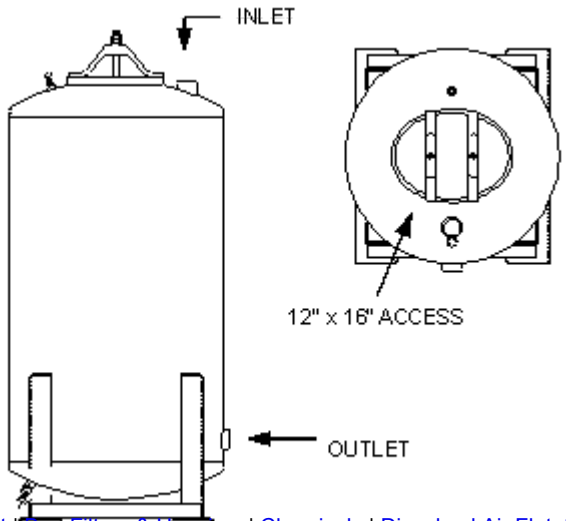
- Dissolved Organic Removal (Activated Carbon)
- Suspended Solids Removal (Sand Filter)
- Dissolved Minerals (Softener Resin)
- Oil and Grease Removal (Organo-Clays)
- Dissolved and Precipitated Metals Removal
- Special Organics (Resin/Carbon Blend)
- Catalytic Reactor (Chlorine and Peroxide Removal)
- Bio-Remediation Contactor Unit



Standard Specifications

HPAF-2000 SPECIFICATIONS			
Overall Height	8'6"	Vessel/Internal Piping Materials	CS(SA-36) / SCH 40 PVC
Diameter	48"	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	3"	External Coating	Epoxy Mastic
Drain / Vent (FNPT)	3/4" / 1/2"	Maximum Pressure / Temp	75PSIG / 140° F
GAC Fill (lbs)	2,000	Cross Sectional Bed Area	12.5 FT^2
Shipping / Operational Weight (lbs)	3,020/6,775	Bed Depth/Volume	5.5 FT / 68.7 FT^3
Capacity in gallons	570	Flow rate based on 5-10 min. contact time	57 - 114 GPM

- Tanks



Liquid Phase V essels, Filter Series			
AFD Series	AF Series	HPAF Series	HPP Series
AFD 30	AF 250	HPAF 500	HPP 50
AFD 55	AF 500	HPAF 1000	HPP 100
AFD 85	AF 1000	HPAF 2000	HPP 200
AFD 110	AF 2000	HPAF 3000	HPP 300
AHP 55	AF 3000	HPAF 5000	HPP 500
N/A	AF 5000	HPAF10000	HPP 1000
N/A	AF10000	HPAF20000	HPP2000

Activated Carbon | Aeration | Air Treatment | Bag Filters & Housings | Chemicals | Dissolved Air Flotation | Dust Collection | Evaporators | Filter Presses | Flocculation | Inline Filter Vessels | Membrane Filtration | Odor Control | Ozone | Oil Water Separators | Sewage Systems | Liquid and Vapor Phase Vessels | Wet Scrubbers | Careers

SAFETY DATA SHEET

Section 1 - Identity

Identity (As Used on Label and List): GC Activated Carbon (Including, but not limited to GC C-40, GC 4 x 8B, GC 4 x 8S, GC 6 x 12, GC 6 x 12S, GC 8 x 30, GC 8 x 30AW, GC 8 x 30S, GC 8 x 30SAW, GC 12 x 40, GC 12 x 40AW, GC 12x40SAW, GC 20 x 50, GC 20 x 50S, GC Powdered, GC WDC activated carbons)

Manufacturers Name: General Carbon Corporation
33 Paterson Street
Paterson, NJ 07501
Tel: (973)523-2223
www.generalcarbon.com
Date Prepared: February 16, 2017

Section 2 - Hazardous Identification

2.1 GHS-US Classification

Eye Irritation	2B H320
STOT	SE 3 H335

Hazards not otherwise classified: Combustible dust. May form combustible dust concentrations in air. All powdered activated carbons are classified as weakly explosive (Dust explosion class St1): Given the necessary conditions of a strong ignition source, right concentrations of airborne carbon dust, adequate oxygen levels, and confinement, the potential for a deflagration event exists. A combustible dust hazard assessment and employee training should be carried out. See sections 7 and 9 for further information on combustible dust precautions.

2.2 Label Elements

Hazard Pictograms

Signal word (GHS-US)	: Warning
Hazard Statements	: H320- Causes eye irritation
	: H335- May cause respiratory irritation
Precautionary statements (GHS-US)	: P261- Avoid breathing dust
	: P264- Wash thoroughly after handling
	: P271- Use in well-ventilated area
	: P280- Wear protective gloves/clothing/eye & face protect
	: P304&340: IF INHALED: Remove person to fresh air

: P305&351&P338: If in eyes, Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.
: P312- Call Poison Control Center/Doctor if you feel sick
: P403& P233- Store in well-ventilated place. Keep container tightly closed
: P405- Store locked up
: P501- Dispose of container to appropriate receptacle

2.3 Other Hazards

No additional information available

2.4 Unknown acute toxicity (GHS-US)

No data available

Section 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixture

Name	CAS #	%	GHS_US classification
Carbon	7440-44-0	100	Not classified

Section 4 – First Aid Measures

4.1 Description of first aid measures

First aid after inhalation	Remove person to fresh air. If not breathing, administer CPR or artificial respiration. Get immediate medical attention.
First aid after skin contact	If skin reddening or irritation develops, seek medical attention
First aid after eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, get medical attention.
First aid after ingestion	If the material is swallowed, get immediate medical attention or advice. DO NOT induce vomiting unless directed to do so by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	May cause respiratory irritation
Symptoms/injuries after skin contact	May cause skin irritation
Symptoms/injuries after eye contact	Causes serious eye damage
Symptoms/injuries after ingestion	May be harmful is swallowed

4.3 Indication of any immediate medical attention and special treatment needed

No additional information available.

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	If involved with fire, flood with plenty of water
Unsuitable extinguishing media	None

5.2 Special hazards arising from substance or mixture

Fire hazard	None known
Explosion hazard	None known
Reactivity	Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, etc. may result in fire.

5.3 Advice for firefighters

Protection during firefighting	Firefighters should wear full protective gear

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

General measures	Avoid contact with the skin and eyes

6.1.1 For non-emergency personnel

No additional information available

6.1.2 For emergency responders

No additional information available

6.2 Environmental precautions

None

6.3 Methods and material for containment and cleaning up

For containment	If possible, stop flow of product
Methods for cleaning up	Shovel or sweep up and put in closed container for disposal

6.4 Reference to other sections

No additional information available

Section 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling	Avoid contact with eyes. Wet activated carbon removes oxygen from air causing severe hazard to workers inside carbon vessels or confined spaces

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	Protect containers from physical damage. Store in dry, cool, well-ventilated area. Store away from strong oxidizers, strong acids, ignition sources, combustible materials, and heat. An adequate air gap between packages is recommended to reduce propagation in the case of fire **.**

Handling: A hazard assessment should be carried out. As with all finely divided materials, ground all transfer, blending, and dust collecting equipment to prevent static discharge. Remove all strong ignition sources from material handling, transfer, and processing areas where dust may be present or accumulate. Practice good housekeeping. Excessive accumulations of dust or dusty conditions can create the potential of secondary explosions. Inspection of hidden surfaces for dust accumulation should be made routinely. If possible, eliminate the pathways for dust to accumulate in hidden areas. Fine carbon dust may penetrate electrical equipment and cause electrical shorts. Where dusting is unavoidable, dust-proof boxes and regular electrical line maintenance are recommended. Refer to NFPA standards 654 for guidance.

Caution employees-no smoking in carbon storage and handling areas. Carbon is difficult to ignite, however, cutting and welding operations should be carried out using hot work permit systems where precautions are taken not to ignite carbon, which may smolder undetected.

7.3 Specific end use(s)

No additional information available

Section 8: Exposure controls/ personal protection

8.1 Control parameters

No additional information available

8.2 Exposure controls

Appropriate engineering controls	: Local exhaust and general ventilation must be adequate to meet exposure standards
Hand Protection	: None required under normal product handling conditions
Eye Protection	: safety glasses
Skin and body protection	: Wear suitable working clothes
Respiratory protection	: If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Particulate
Color	: Black
Odor	: No data available
Odor threshold	: No data available
Ph	: No data available
Relative evaporation rate	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor density @ 20 deg C	: No data available
Relative Density	: 28-33 lb/ cubic foot
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

Combustible dust- These products may contain combustible dusts. May form combustible dust concentrations in air. All powdered activated carbons are weakly explosive. No specific information on these carbons are available.
Typical combustible dust data for a variety of activated carbons:
K_{st} values reported between 43-113 (various sources).
Dust explosion class St1 (K_{st} values < 200 are Class St1-weakly explosive).
MEC (minimum explosible concentration) in air 50 and 60 g/m^3 (two reports)
Volatile content (by weight): < 8% ASTM D3175-11 (Watercarb)
MIT (minimum ignition temperature) values reported between 400-680°C (752-1256°F) (four reports)
Maximum Absolute Explosion pressure values reported between 6.0-8.6 bar (four reports)

9.2 Other information
No additional information available

Section 10: Stability and reactivity

10.1 Reactivity
Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, etc. may result in fire

10.2 Chemical stability
Stable under normal conditions

10.3 Possibility of hazardous reactions
Will not occur

10.4 Conditions to avoid
None

10.5 Incompatible materials
Strong oxidizing and reducing agents such as ozone, liquid oxygen or chlorine.

10.6 Hazardous decomposition products
Carbon monoxide may be generated in the event of a fire.

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity : Not classified

Carbon (7440-44-0)

LD50 oral rat	: >10000 mg/kg
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Causes eye irritation
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity	: May cause respiratory irritation (single exposure)
Specific target organ toxicity	: Not classified (repeated exposure)
Aspiration hazard	: Not classified

Section 12: Ecological Information

12.1 Toxicity
No additional information available

12.2 Persistence and degradability
No additional information available

12.3 Bioaccumulative potential
No additional information available

12.4 Mobility in soil
No additional information available

12.5 Other adverse effects

No additional information available

Section 13: Disposal concerns

13.1 Waste treatment methods

Waste Disposal recommendations : Dispose of contents/container in accordance with local/ regional/ international regulations

Section 14: Transportation information

In accordance with DOT/ADR/RID/ADNR/IMDG/ICAO/IATA

14.1 UN Number

Not applicable. See Note 1 below.

14.2 UN proper shipping name

Not applicable

Note 1: Under the UN classification for activated carbon, all activated carbons have been identified as a class 4.2 product. However, This product has been tested according to the United Nations Transport of Dangerous Goods test protocol for a "self-heating substance" (United Nations Transportation of Dangerous Goods, Manual of Tests and Criteria, Part III, Section 33.3.1.6 - Test N.4 - Test Method for Self Heating Substances) and it has been specifically determined that this product does not meet the definition of a self heating substance (class 4.2) or any other hazard class, and therefore should not be listed as a hazardous material. This information is applicable only for the Activated Carbon Product identified in this document.

Section 15: Regulatory information

15.1 US Federal regulations

Carbon (7440-44-0)

Listed on the United States TSCA inventory

15.3 US State regulations

No additional information available

Section 16: Other information

Full text of H-phrases:

Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H335	May cause respiratory irritation

NFPA®

NFPA health hazard : 1-Exposure could cause irritation but only minor residual injury even if no treatment is given

NFPA fire hazard : 1- Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur (e.g. mineral oil). Includes some finely divided suspended solids that do not require heating before ignition can occur. Flash point at or above 93.3 °C (200 °F)

NFPA reactivity : 0- Normally stable, even under fire exposure conditions, and are not reactive with water

The information contained herein is accurate to the best of our knowledge. General Carbon Corporation makes no warranty with respect hereto said information and disclaims all liability from reliance there in.

CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

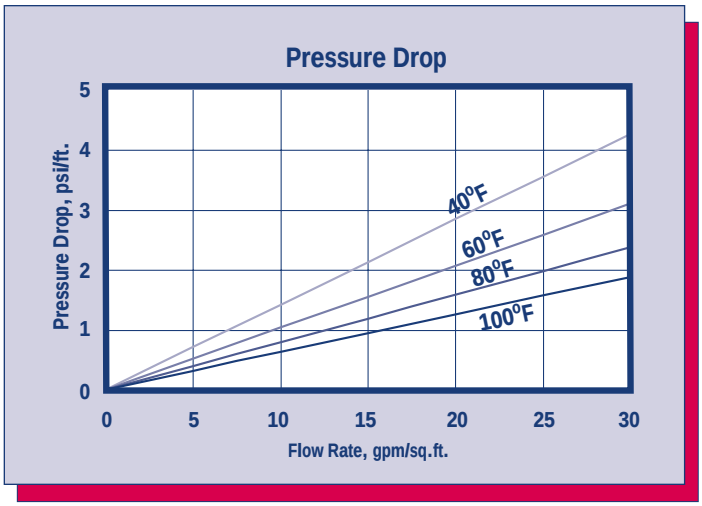
RESINTECH CGS is a high purity, light colored, high capacity, gel type sulfonated polystyrene cation resin supplied in the sodium form as moist, tough uniform spherical beads. *ResinTech CGS* specifically is intended for use in all water softening applications,including beverages, potable water and water used for food processing. It's high capacity and high DVB content provide long life and good chlorine resistance in all potable water applications. (It is also available as a dark colored product *RESINTECH CGS-BL* with identical properties.)

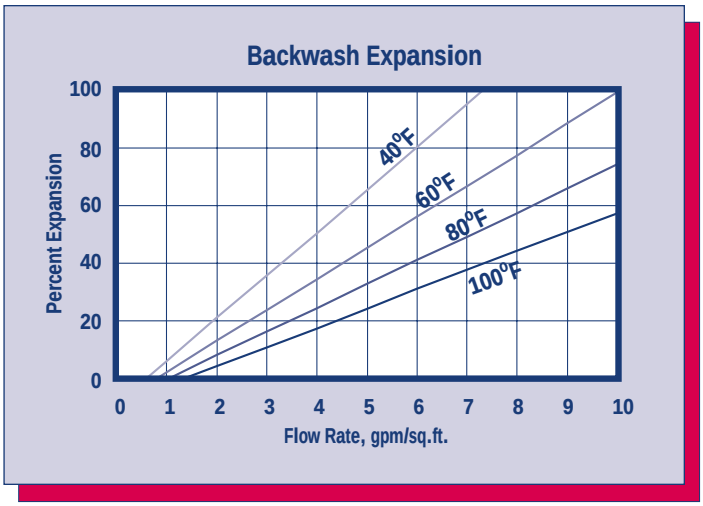
FEATURES & BENEFITS

- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the F.D.A.*
- **EXCELLENT REGENERATION EFFICIENCY**
  Virtually the same operating capacity as premium grade *ResinTech CG8-BL*
- **NSF/ANSI-61 VALIDATED**
- **UNIFORM PARTICLE SIZE**
  16 to plus 50 mesh range; gives a LOWER PRESSURE DROP while maintaining SUPERIOR KINETICS.
- **SUPERIOR PHYSICAL STABILITY**
  90% plus sphericity and high crush strengths together with a very uniform particle size provide greater resistance to bead breakage while maintaining low pressure drops.
- **LOW COLOR THROW**

*For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to insure compliance with extractable levels.

HYDRAULIC PROPERTIES





PRESSURE DROP - The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate, at various temperatures.

BACKWASH - After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. This will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of *RESINTECH CGS* in the sodium form.

1 Resintech Plaza • 160 Cooper Road • West Berlin,NJ 08091 • Phone:(856)768-9600 • Fax:(856)768-9601 • E-mail:ixresin@resintech.com • Web Site:www.resintech.com

RESINTECH® CGS

PHYSICAL PROPERTIES

Polymer Structure	Styrene Crosslinked with DVB
Functional Group	$R-(SO_3)^-M^+$
Ionic Form, as shipped	Sodium
Physical Form	Tough, Spherical Beads
Screen Size Distribution	16 to 50
+16 mesh (U.S. Std)	< 5 percent
-50 mesh (U.S. Std)	< 1 percent
pH Range	0 to 14
Sphericity	90+ percent
Uniformity Coefficient	Approx. 1.6
Water Retention	
Sodium Form	48 to 54 percent
Solubility	Insoluble
Shipping Weight	
Sodium Form	48 lbs./cu.ft.
Total Capacity	
Sodium Form	1.8 meq/ml min

SUGGESTED OPERATING CONDITIONS

Maximum Temperature	
Sodium Form	250^0 F
Minimum Bed Depth	24 inches
Backwash Rate	50 to 75% Bed Expansion
Regenerant (NaCl or KCl)	
Concentration	10 to 15 percent
Flow Rate	0.5 to 1.5 gpm/cu.ft.
Contact Time	> 20 minutes
Level	4 to 15 pounds/cu.ft.
Displacement Rate	Same as Regen Flow Rate
Volume	10 to 15 gallons/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Volume	35 to 60 gallons/cu.ft.
Service Flow Rate	2 to 10 gpm/cu.ft.

OPERATING CAPACITY

Sodium Chloride (NaCl) Regeneration

The sodium cycle operating capacity of *RESINTECH CGS* for hardness removal at various regeneration levels with an influent calcium/magnesium ratio of 2/1 and a hardness level of 500 ppm, as $CaCO_3$, is shown in the following table:

Pounds NaOH/cu.ft.	Capacity Kilograins/cu.ft.
5	20.0
7.5	25.4
10	29.0
15	33.0

Potassium Chloride (KCl) Regeneration

The potassium cycle operating capacity of *RESINTECH CGS* for hardness removal at various regeneration levels with an influent calcium/magnesium ratio of 2/1 and a hardness level of 500 ppm, as $CaCO_3$, is shown in the following table:

Pounds NaOH/cu.ft.	Capacity Kilograins/cu.ft.
5	16.6
7.5	21.8
10	26.6
15	31.2

APPLICATIONS

Softening

RESINTECH CGS is ideally suited for industrial, commercial, or residential softening applications where free chlorine is not present because of its high capacity, uniform particle size and good physical stability.

SBG1

ANION EXCHANGE RESIN TYPE ONE GEL Cl OR OH FORM

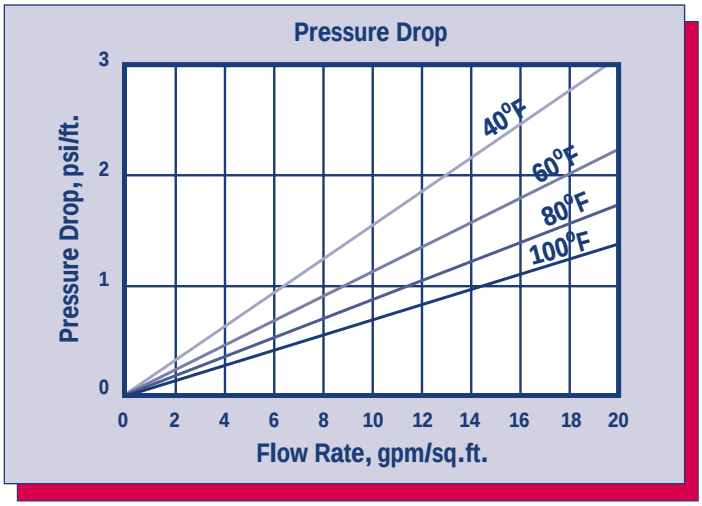
ResinTech SBG1 is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *ResinTech SBG1* is intended for use in all types of deionization systems and chemical processing applications. It is similar to *ResinTech SBG1P* but has a higher volumetric capacity and exhibits lower TOC leach rates. This makes it the better performer in single use applications such as in cartridge deionization and when high levels of regeneration are used such as in polishing mixed beds. On the other hand, *ResinTech SBG1P* is more resistant to organic fouling and gives higher operating capacities at low regeneration levels such as those used in make up demineralizers.

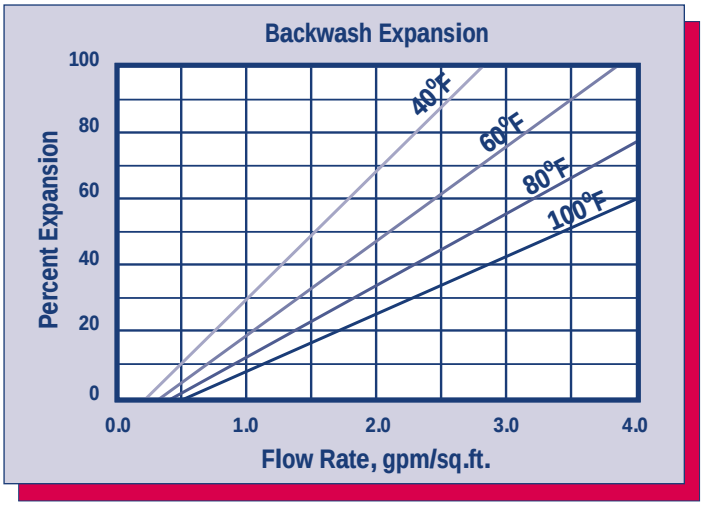
FEATURES & BENEFITS

- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS.**
  Conforms to paragraph 21CFR173.125 of the Food Additives Regulations of the F.D.A.*
- **HIGH TOTAL CAPACITY**
  Provides longer run lengths in single use applications or where high levels of regeneration are used such as in mixed bed polishers, cartridge demineralizers.
- **UNIFORM PARTICLE SIZE**
  16 to plus 50 mesh range; gives a LOWER PRESSURE DROP while maintaining SUPERIOR KINETICS.
- **SUPERIOR PHYSICAL STABILITY**
- **LOWER TOC LEACH RATE**
  Makes it ideal for polishing mixed beds in wafer washing and other high purity water polishing applications.

*For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to ensure compliance with extractable levels.

HYDRAULIC PROPERTIES





PRESSURE DROP

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

BACKWASH

After each cycle the resin bed should be backwashed at a rate that expands the bed 50 to 75 percent. This will remove any foreign matter and reclassify the bed. The graph above shows the expansion characteristics of *ResinTech SBG1* in the sodium form.

RESINTECH® SBG1

PHYSICAL PROPERTIES

Polymer Structure	Styrene Crosslinked with DVB
Functional Group	R-N-$(CH_3)_3^+Cl^-$
Ionic Form, as shipped	Chloride or Hydroxide
Physical Form	Tough, Spherical Beads
Screen Size Distribution	16 to 50
+16 mesh (U.S. Std)	< 5 percent
-50 mesh (U.S. Std)	< 1 percent
pH Range	0 to14
Sphericity	> 93 percent
Uniformity Coefficient	Approx. 1.6
Water Retention	
Chloride Form	43 to 50 percent
Hydroxide Form	Approx. 53 to 60 percent
Solubility	Insoluble
Approximate Shipping Weight	
Cl Form	44 lbs/cu.ft.
OH Form	41 lbs/cu.ft.
Swelling Cl- to OH-	18 to 25 percent
Total Capacity	
Cl Form	1.45 meq/ml min
OH Form	1.15 meq/ml min

SUGGESTED OPERATING CONDITIONS

Maximum Continuous Temperature	
Hydroxide Form	140°F
alt Form	170°F
Minimum Bed Depth	24 inches
Backwash Rate	50 to 75 percent Bed Expansion
Regenerant Concentration*	2 to 6 percent
Regenerant Flow Rate	0.25 to 1.0 gpm/cu.ft.
Regenerant Contact Time	At least 40 Minutes
Regenerant Level	4 to 10 pounds/cu.ft.
Displacement Rinse Rate	Same as Regenerant Flow Rate
Displacement Rinse Volume	10 to 15 gals/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	35 to 60 gals/cu.ft.
Service Flow Rates	
Polishing Mixed Beds	3 to 15 gpm/cu.ft.
Non-Polishing Apps.	2 to 4 gpm/cu.ft.

OPERATING CAPACITY

The operating capacity of *RESINTECH SBG1* for a variety of acids at various regeneration levels when treating an influent with a concentration 500 ppm, expressed as $CaCO_3$ is shown in the following table:

Pounds $NaOH/ft^3$	Capacity Kilograms per cubic foot			
	HCl	H_2SO_4	H_2SiO_3	H_2CO_3
4	11.3	14.0	14.7	18.6
6	12.8	16.3	17.3	19.8
8	14.3	13.3	19.5	21.6
10	15.5	20.0	22.2	22.2

APPLICATIONS

DEMINERALIZATION – *RESINTECH SBG1* is highly recommended for use in mixed bed demineralizers, wherever complete ion removal; superior physical and osmotic stability and low TOC leachables are required such as in wafer fabrication and other ultrapure applications.

RESINTECH SBG1 has high total capacity and low swelling on regeneration and provides maximum operating capacity in cartridge deionization applications. It is ideal for single use applications such as precious metal recovery, radwaste disposal and purification of toxic waste streams.

Highly crosslinked Type 1, styrenic anion exchangers have greater thermal and oxidation resistance than other types of strong base resins. They can be operated and regenerated at higher temperatures. The combination of lower porosity, high total capacity and Type 1 functionality make *RESINTECH SBG1* the resin of choice when water temperatures exceed 85°F and where the combination of carbon dioxide, borate and silica exceed 40% of the total anions.

RESINTECH SBG1P and *RESINTECH SBG1* are quite similar; the difference between them is the degree of porosity. *RESINTECH SBG1P* has greater porosity that gives it faster kinetics, and greater ability to reversibly sorb slow moving ions such as Naturally occurring Organic Matter (NOM). At lower regeneration levels and where chlorides make up a substantial portion of the anion load, or where the removal and elution of naturally occurring organics is of concern *RESINTECH SBG1P*, SBACR or SBG2 should be considered. At the higher regeneration levels used in mixed bed polishers *RESINTECH SBG1* provides higher capacity, and the lowest possible TOC leach rates.

***CAUTION:DO NOT MIX ION EXCHANGE RESIN WITH STRONG OXIDIZING AGENTS.** Nitric acid and other strong oxidizing agents can cause explosive reactions when mixed with organic materials,such as ion exchange resins.

Material Safety Data Sheets (MSDS) are available for all ResinTech Inc.products.To obtain a copy,contact your local ResinTech sales representative or our corporate headquarters. They contain important health and safety information.That information may be needed to protect your employees and customers from any known health and safety hazards associated with our products.We recommend that you secure and study the pertinent MSDS for our products and any other products being used These suggestions and data are based on information we believe to be reliable.They are offered in good faith.However we do not make any guarantee or warranty. We caution against using these products in an unsafe manner or in violation of any patents;further we assume no liability for the consequences of any such actions.

Safety Data Sheet

Product Names: SBG1, SBG1-HP, SBG1-UPS, SBG1-C, SBG1-F, SBMP1, SBMP1-UPS, GP-SBA, SBG1P, SBG1P-UPS

(Type I Strong Base Anion Exchange Resin Chloride Form)

Effective date 31 March 2015

Section 1: Identification

1a	Product Names	ResinTech SBG1, SBG1-HP, SBG1-UPS, SBG1-C, SBG1-F, SBMP1, SBMP1-UPS, GP-SBA, SBG1P, SBG1P-UPS
1b	Common Name	Type I Strong base anion resin in the chloride form.
1c	Intended use	All general purpose anion exchanges for general use including salt form and demineralization.
1d	Manufacturer Address	ResinTech, Inc. 160 Cooper Road, West Berlin, NJ 08091 USA
	Phone Email	856-768-9600 ixresin@resintech.com

Section 2: Hazard Identification

2a Hazard classification

Not hazardous or dangerous

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

2b Product description

White, yellow, or orange colored solid beads approximately 0.6 mm diameter with little or no odor.

2c Precautions for use

Safety glasses and gloves recommended.
Slipping hazard if spilled.

2c Potential health effects

Will cause eye irritation.
Will cause skin skin irritation.
Ingestion is not likely to pose a health risk.

2d Environmental effects

This product may alter the pH of any water that contacts it.

RESINTECH INC.
INNOVATIONS IN ION EXCHANGE

MATERIAL SAFETY DATA SHEET

ION EXCHANGE RESINS

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

Cation Exchange Resin, Hydrogen Form

Effective Date: 11/1/07

1. Company Information:

Company Address:

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

Information Numbers:

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

2. Composition/Ingredients:

Sulfonated copolymer of styrene and divinylbenzene in the hydrogen form. CAS# 69011-20-7 (35 – 65%)

Water CAS# 7732-18-5 (35 – 65%)

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

3. Physical/Chemical Data:

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

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

4. Fire & Explosion Hazard Data

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

	230 C. Autoignition occurs above 500C. Possible fire.
Combustion Products:	Hazardous combustion products may include and are not limited to: hydrocarbons, sulfur oxides, organic sulfonates, carbon monoxide, carbon dioxide, benzene compounds.
Extinguishing Media:	Water, CO_2, Talc, Dry Chemical
Special Fire Fighting Procedures:	MSHA/NIOSH approved self-contained breathing gear.

5. Reactivity Data

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

6. Health Hazards & Sara (Right to Know)

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

7. First Aid

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

8. Control Measures

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

9. Safe handling procedures

In Case of Spills:	Sweep up material and transfer to containers. Use caution – the floor will be slippery!

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

10. Additional Information:

Special precautions to be taken in handling and storage**:**	Practice reasonable care and caution. Metal equipment with feed, regenerant, resin form, and effluent of that process.
TSCA Considerations:	Every different salt or ionic form of an ion-exchange resin is a separate chemical. If you use an ion-exchange resin for ion-exchange purposes and then remove the by-product resin from its vessel or container prior to recovery of the original or another form of the resin or of another chemical, the by-product resin must be listed on the TSCA Inventory (unless an exemption is applicable). It is the responsibility of the customer to ensure that such isolated, recycled by-product resins are in compliance with TSCA. Failure to comply could result in substantial civil or criminal penalties being assessed by the Environmental Production Agency.
MSDS Status:	Canadian regulatory information added.

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

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

12. Canadian Regulations:

WHMIS Information**:**	The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is: This product is not a "Controlled Product" under WHMIS.
Canadian TDG Information:	For guidance, the Transportation of Dangerous Good Classification for this product is: Not Regulated.

sc200™ UNIVERSAL CONTROLLER

Applications
- Drinking Water
- Wastewater
- Industrial Water
- Power

One Controller for the Broadest Range of Sensors.

Choose from 30 digital and analog sensor families for up to 17 different 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 offers 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.

HACH®
Be Right™

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

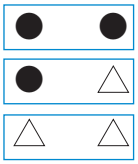
Choose from Hach's Broad Range of Digital and Analog Sensors

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	△

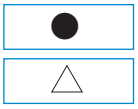
● = Digital △ = Analog

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



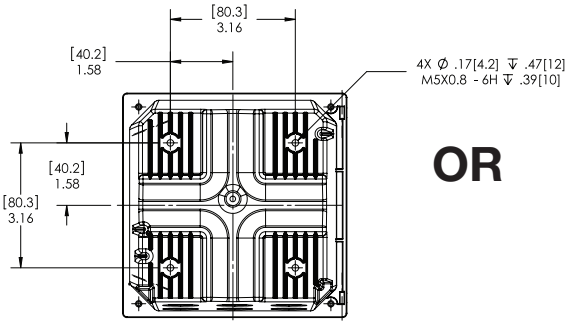
Specifications*

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.

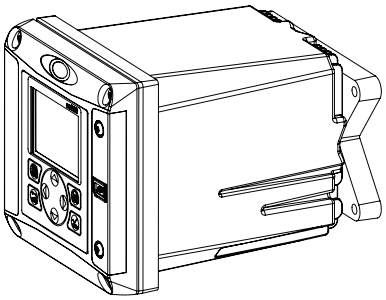
Dimensions

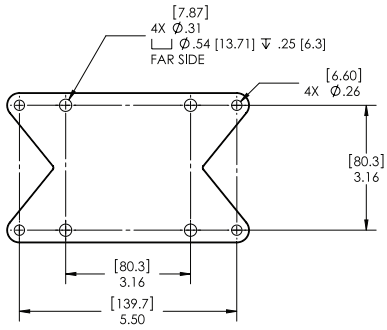
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

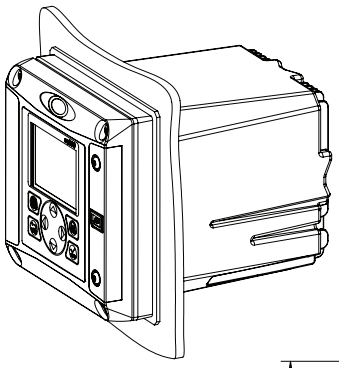
OR

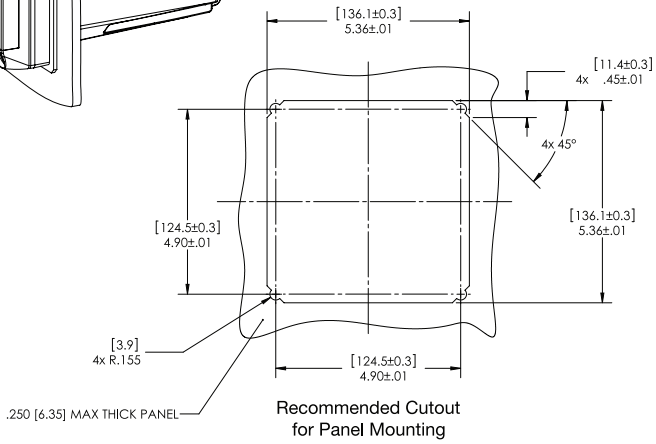




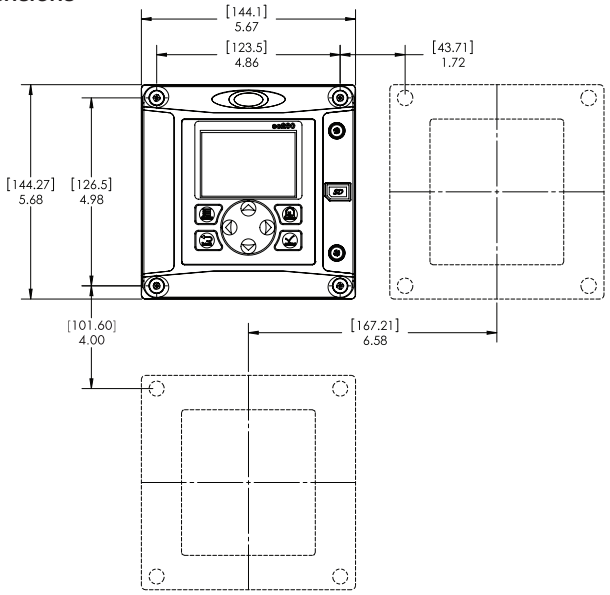
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



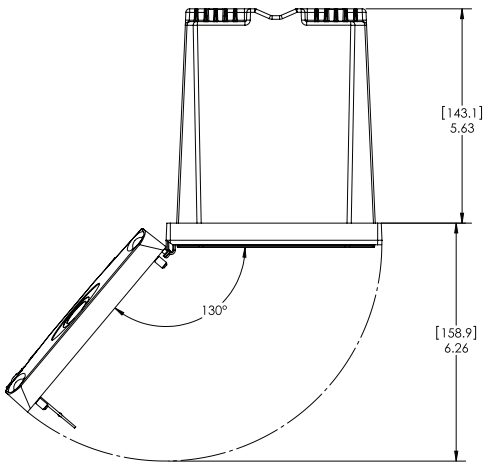


Recommended Cutout
for Panel Mounting

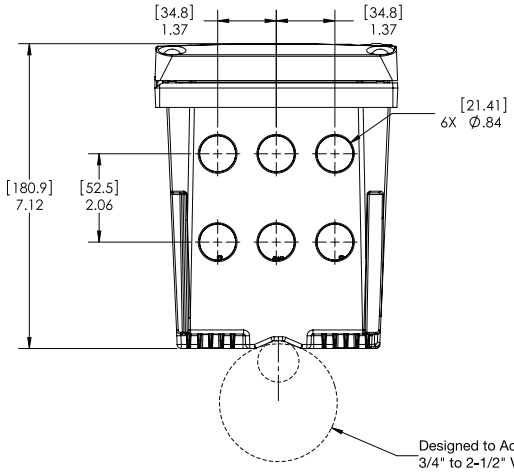


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



Door Opening Details



Ordering Information

sc200 for Hach Digital and Analog Sensors

LXV404.99.00552	sc200 controller, 2 channels, digital
LXV404.99.00502	sc200 controller, 1 channel, digital
LXV404.99.00102	sc200 controller, 1 channel, pH/DO
LXV404.99.00202	sc200 controller, 1 channel, Conductivity
LXV404.99.01552	sc200 controller, 2 channels, digital, Modbus RS232/RS485
LXV404.99.00112	sc200 controller, 2 channel, pH/DO

Note: Other Sensor combinations are available. Please contact Hach Technical Support or your Hach representative.

Note: Communication options (MODBUS, Profibus DPV1, and HART) are available. Please contact Hach Technical Support or your Hach representative.

sc200 for Ultrapure Sensors

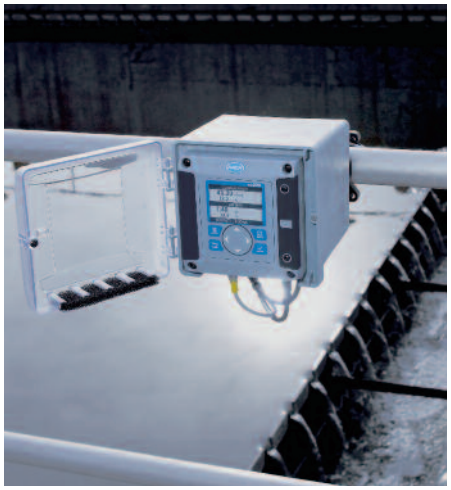
9500.99.00602	sc200 controller, 1 channel, ultrapure conductivity
9500.99.00702	sc200 controller, 1 channel, ultrapure pH
9500.99.00662	sc200 controller, 2 channel, ultrapure conductivity
9500.99.00772	sc200 controller, 2 channel, ultrapure pH

Sensor and Communication Modules

9012900	Analog pH/ORP and DO module for GLI Sensors
9013000	Analog Conductivity module for GLI Sensors
9012700	Flow module
9012800	4-20 mA Input Module
9525700	Analog pH/ORP Module for Polymetron Sensors
9525800	Analog Conductivity Module for Polymetron Sensors
9013200	Modbus 232/485 Module
9173900	Profibus DP Module
9328100	HART Module
9334600	4-20 mA Output Module (Provides 3 additional mA Outputs)

Accessories

9220600	sc200 Weather and Sun Shield with UV Protection Screen
8809200	sc200 UV Protection Screen
9218200	SD card reader (USB) for connection to PC
9218100	4 GB SD card



HACH COMPANY World Headquarters: Loveland, Colorado USA

United States: 800-227-4224 tel 970-669-2932 fax orders@hach.com
Outside United States: 970-669-3050 tel 970-461-3939 fax int@hach.com
hach.com

LIT2665 Rev 7
K13 Printed in U.S.A.

HACH®
Be Right™

Sulfuric Acid, 3M

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Sulfuric Acid, 3M**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25899**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Health hazard
Skin corrosion, category 1A
Serious eye damage, category 1

Corrosive to metals, category 1
skin corr./irrit. 1A
Corrosive to metals. 1
Eye corr. 1

Signal word :Danger

Hazard statements:
May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage

Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Wear protective gloves/protective clothing/eye protection/face protection
Wash ... thoroughly after handling
Do not breathe dust/fume/gas/mist/vapours/spray
Keep only in original container
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
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 ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
Specific treatment (see ... on this label)
Absorb spillage to prevent material damage
Store locked up
Dispose of contents/container to ...

Other Non-GHS Classification:

WHMIS

D1A 

E 

NFPA/HMIS

NFPA SCALE (0-4)

Health	3
Flammability	0
Physical Hazard	0
Personal Protection	X

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7664-93-9	Sulfuric Acid, ACS	31.004 %
CAS 7732-18-5	Water	68.996 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position.Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Get medical assistance if cough or other symptoms appear.

After skin contact: Rinse/flush exposed skin gently using soap and water for 15-20 minutes.Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye.Rinse/flush exposed eye(s) gently using water for 15-20 minutes.Remove contact lens(es) if able to do so during rinsing.Seek medical attention if irritation persists or if concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists.

Most important symptoms and effects, both acute and delayed:

Irritation.Headache.Nausea.Shortness of breath.;

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8.Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment.Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.Containerize for disposal. Refer to Section 13.If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing.Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Follow proper disposal methods. Refer to Section 13.Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages.Protect from freezing and physical damage.Provide ventilation for containers. Keep container tightly sealed.Store away from incompatible materials.

SECTION 8 : Exposure controls/personal protection

Control Parameters:	7664-93-9, Sulfuric Acid, ACS, OSHA PEL: 1mg/m3 7664-93-9, Sulfuric Acid, ACS, ACGIH TLV: 1 mg/m3
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
Respiratory protection:	Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls.When necessary use NIOSH approved breathing equipment.
Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves.Wear protective clothing.
Eye protection:	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles are appropriate eye protection.
General hygienic measures:	Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing.Before wearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid.	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Odorless	**Vapor pressure**:	<0.00120mmHg
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	< 0.03	**Relative density**:	Not Determined
Melting/Freezing point:	11C	**Solubilities**:	Miscible
Boiling point/Boiling range:	105 - 325C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	Not Determined
Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined			

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing.

Conditions to avoid: Incompatible materials.
Incompatible materials: Organics. Metals. Chlorates. Alkalines. Carbides. Fulminates. Reducing agents. Nitrates. Acetic acid. Oxidizing agents
Hazardous decomposition products: Oxides of sulfur.

SECTION 11 : Toxicological information

Acute Toxicity:		
Inhalation:	510 mg/m3 2 h	Inhalation LC50 Rat
Oral:	2140 mg/kg	Oral LD50 Rat
Chronic Toxicity: No additional information.		
Corrosion Irritation: No additional information.		
Sensitization:		No additional information.
Single Target Organ (STOT):		No additional information.
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.
Reproductive Toxicity:		No additional information.

SECTION 12 : Ecological information

Ecotoxicity

Freshwater Fish: 96 Hr LC50 Brachydanio rerio: >500 mg/L [static]

Fish: LC50 - Gambusia affinis (Mosquito fish) - 42 mg/l - 96 h

Invertebrates: EC50 - Daphnia magna (Water flea) - 29 mg/l - 24 h

Persistence and degradability:
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material.Dispose of empty containers as unused product.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

1830

UN proper shipping name

Sulfuric Acid Solution

Transport hazard class(es)

Class:
8 Corrosive substances

Packing group:II
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic

SARA Section 313 (Specific toxic chemical listings):

7664-93-9 Sulfuric Acid

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7664-93-9 Sulfuric Acid 1000 lbs

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the

SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 02.15.2015
Last updated : 03.19.2015

Appendix B

MassDEP Transmittal Form

Enter your transmittal number → X277754 (Transmittal Number)

Your unique Transmittal Number can be accessed online:
http://www.mass.gov/eea/agencies/massdep/service/approvals/transmittal-form-for-payment.html

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

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

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

3. Three copies of this form will be needed.

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

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

MassDEP
P.O. Box 4062
Boston, MA
02211

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

A. Permit Information

1. Permit Code: 4 to 7 character code from permit instructions	2. Name of Permit Category
WM 15	NPDES General Permit Notice of Intent

3. Type of Project or Activity: Construction Dewatering

B. Applicant Information – Firm or Individual

1. Name of Firm - Or, if party needing this approval is an individual enter name below: Massachusetts Institute of Technology

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

5. Street Address: 77 Massachusetts Avenue, Building N52-496

6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #
Cambridge	MA	02139	617-452-2508	

11. Contact Person	12. e-mail address
Phyllis Carter	PCarter@mit.edu

C. Facility, Site or Individual Requiring Approval

1. Name of Facility, Site Or Individual: New Vassar Street Residence Hall

2. Street Address: 125 and 129 Vassar Street

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Cambridge	MA	02139		

8. DEP Facility Number (if Known)	9. Federal I.D. Number (if Known)	10. BWSC Tracking # (if Known)
RTN 3-30788 and 3-30886		

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

1. Name of Firm Or Individual: GEI Consultants, Inc.

2. Address: 400 Unicorn Park Drive

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Woburn	MA	01801	781-721-4000	

8. Contact Person	9. LSP Number (BWSC Permits only)
Ileen Gladstone, P.E., LSP, LEED AP	9719

E. Permit - Project Coordination

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

EOEA File Number

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Special Provisions:

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

Check Number	Dollar Amount	Date
739357	$500.00	2/21/18

Appendix C

Receiving Water Laboratory Data Report

CERTIFICATE OF ANALYSIS

Heather Ballantyne
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: MIT Vassar St - RGP (1701323)
ESS Laboratory Work Order Number: 1801270

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 3:59 pm, Jan 24, 2018

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

SAMPLE RECEIPT

The following samples were received on January 17, 2018 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2017 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

ESS Laboratory is unable to achieve the required detection limit of 0.4 mg/L for Ethanol for the RGP permit. We have also been unable to procure a subcontract laboatory that is able to achieve this limit. The data for Ethanol has been reported using our current method reporting limit.

Lab Number	Sample Name	Matrix	Analysis
1801270-01	1701323-SW1	Surface Water	200.7, 350.1, 9040

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-SW1
Date Sampled: 01/16/18 13:00
Percent Solids: N/A

ESS Laboratory Work Order: 1801270
ESS Laboratory Sample ID: 1801270-01
Sample Matrix: Surface Water
Units: ug/L

Extraction Method: [CALC]

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Hardness	**66700** (82.4)		200.7		1	KJK	01/19/18 21:28	1	1	[CALC]
Iron	**702** (10.0)		200.7		1	KJK	01/19/18 21:28	100	10	CA81829

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-SW1
Date Sampled: 01/16/18 13:00
Percent Solids: N/A

ESS Laboratory Work Order: 1801270
ESS Laboratory Sample ID: 1801270-01
Sample Matrix: Surface Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.20** (0.10)		350.1		1	JLK	01/19/18 17:14	mg/L	CA81916
pH	**6.77** (N/A)		9040		1	CCP	01/17/18 19:09	S.U.	CA81730
pH Sample Temp	**Aqueous pH measured in water at 18.1 ºC.** (N/A)								

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CA81829 - [CALC]										
Blank										
Hardness	ND	82.4	ug/L							
Iron	ND	10.0	ug/L							
LCS										
Hardness	2850	82.4	ug/L							
Iron	225	10.0	ug/L	250.0		90	85-115			
LCS Dup										
Hardness	2920	82.4	ug/L							
Classical Chemistry										
Batch CA81916 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.10	0.10	mg/L	0.09994		95	80-120			
LCS										
Ammonia as N	1.00	0.10	mg/L	0.9994		100	80-120			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

Notes and Definitions

Z16	Aqueous pH measured in water at 18.1 ºC.
U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1801270

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1801270
Date Received: 1/17/2018
Project Due Date: 1/24/2018
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 1.1 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / (No)
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	196048	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	196049	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	196050	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	196051	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	

2nd Review
Are barcode labels on correct containers? (Yes) / No

Completed By: Date & Time: 1/17/18 1614
Reviewed By: Date & Time: 1/17/18 1739
Delivered By: 1/17/18 1739

ESS Laboratory

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

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 1801270

Turn Time: X Standard Rush _____ Approved By: _____

Reporting Limits -

State where samples were collected: **MA NH**

Discharge into: **Fresh Water** ☐ **Salt Water** ☐

Is this project for: **RGP**

Electonic Deliverable Yes____ No____
Format: Excel___ Access___ PDF___ Other_____

Project Manager: Heather Ballantyne
Company: GEI Consultants
Address: 400 Unicorn Park Dr.
Woburn, MA 01801

Project # 1710323
Project Name: MIT Vassar St Residence
PO #

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Containers	RGP Metals Total Fe Only **	RGP Metals Dissolved	Hardness (Calculation)	Ethanol ASTM D3695	pH	Total Cyanide 4500 LL	TPH 1664	TSS 2540D*	TRC 4500-CL D*	Ammonia 350.1	Tri Cr (Calc. MUST run T. Cr)	Hex Cr 3500	Phenol 420.1	RGP VOC Long List 524	1,4-Dioxane 8270-SIM	EDB 504.1	RGP SVOC Log List 625-SIM	PCB 608	Comment #
					Analysis																				
1	1/16/18	1300	G	SW	1701323-SW1	4	X		X		X					X									1,2
Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____							4	4	4	1	1	5	2	1	1	3	-	1	3	2	1	2	1	1	
Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA							P	P	P	V	P	P	AG	P	P	P	-	P	AG	V	AG	V	AG	AG	

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

Cooler Present X Yes ____ No
Seals Intact ___ Yes ___ No NA: X
Cooler Temperature: ice temp: 1.1

Sampled by :

Comments: 1) ~~RGP Metals include Sb, As, Cd, Cu, Fe, Pb, Ni, Se, Ag and Zn by 200.7/3113B and Hg by 245.1~~ mkm 1/19/18
2) Parameters in **BOLD** have Short hold-time **PERMIT ATTACHED**
~~* TSS, TRC and Cl taken from the same container~~ Fe only per HB 1/18/19 sample ID correction per MG. mkm 1/22/18

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Molly Mer	1/16/18 1500	GEI Fridge	GEI Fridge	1/17/18 - 11:50	Seyena J. Tobey
Seyena J. Tobey	1/17/18 11:50	[illegible] 1/17/18 11:50	[illegible] 1/17/18 15:50	Date/Time	[illegible] 1/17/18 1610

Please E-mail all changes to Chain of Custody in writir

Page ____ of ____

ESS Laboratory

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

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 1801270

Turn Time: X Standard Rush _____ Approved By: _____

Reporting Limits -
Discharge into: Fresh Water ☐ Salt Water ☐

State where samples were collected: **MA NH**

Is this project for: **RGP**

Electonic Deliverable Yes____ No____
Format: Excel___ Access___ PDF___ Other_____

Project Manager: Heather Ballantyne
Company: GEI Consultants
Address: 400 Unicorn Park Dr.
Woburn, MA 01801

Project # 1710323
Project Name: MIT Vassar St Residence
PO #

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Containers	RGP Metals Total	RGP Metals Dissolved	Hardness (Calculation)	Ethanol ASTM D3695	pH	Total Cyanide 4500 LL	TPH 1664	TSS 2540D*	TRC 4500-CL D*	Ammonia 350.1	Tri Cr (Calc. MUST run T. Cr)	Hex Cr 3500	Phenol 420.1	RGP VOC Long List 524	1,4-Dioxane 8270-SIM	EDB 504.1	RGP SVOC Log List 625-SIM	PCB 608	Comment #
1	1/16/18	1300	G	SW	1710323-SW1	4	X		X		X					X									1,2

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

	4	4	4	1	1	5	2	1	1	3	-	1	3	2	1	2	1	1							
Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA	P	P	P	V	P	P	AG	P	P	P	-	P	AG	V	AG	V	AG	AG							

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

Cooler Present X Yes ____ No
Seals Intact ___ Yes ___ No NA: X
Cooler Temperature: ice temp: 1.1

Sampled by :

Comments: 1) RGP Metals include Sb, As, Cd, Cu, Fe, Pb, Ni, Se, Ag and Zn by 200.7/3113B and Hg by 245.1
2) Parameters in **BOLD** have Short hold-time **PERMIT ATTACHED**
* **TSS, TRC and Cl taken from the same container**

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Molly Mer	1/16/18 1500	GEI Fridge	GEI Fridge	1/17/18 - 11:50	Seyena J. Tobey
Seyena J. Tobey	1/17/18 11:50				

Please E-mail all changes to Chain of Custody in writin

Page ____ of ____

Appendix D

Source Water Laboratory Data Report

CERTIFICATE OF ANALYSIS

Heather Ballantyne
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: MIT Vassar St - RGP (1701323)
ESS Laboratory Work Order Number: 1712438

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 3:48 pm, Dec 27, 2017

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

SAMPLE RECEIPT

The following samples were received on December 19, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2017 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

ESS Laboratory is unable to achieve the required detection limit of 0.4 mg/L for Ethanol for the RGP permit. We have also been unable to procure a subcontract laboatory that is able to achieve this limit. The data for Ethanol has been reported using our current method reporting limit.

Lab Number	Sample Name	Matrix	Analysis
1712438-01	1701323-B-1 OW	Ground Water	1664A, 200.7, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608, 625 SIM, 8270D SIM, ASTM D3695

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP ESS Laboratory Work Order: 1712438

PROJECT NARRATIVE

625(SIM) Semi-Volatile Organic Compounds

1712438-01 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (197% @ 15-110%)

C7L0385-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (90% @ 80-120%)

C7L0385-CCV1 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (241% @ 80-120%)

CL72633-BLK1 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (175% @ 15-110%)

CL72633-BS1 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (204% @ 15-110%)

CL72633-BSD1 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (171% @ 15-110%)

Classical Chemistry

1712438-01 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

Dissolved Metals

1712438-01 **Elevated Method Reporting Limits due to sample matrix (EL).**
Lead

Total Metals

1712438-01 **Elevated Method Reporting Limits due to sample matrix (EL).**
Lead

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
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7471B - Solid Mercury
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8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
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9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

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3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (10.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Arsenic	ND (2.0)		3113B		2	KJK	12/20/17 23:49	100	20	CL71954
Cadmium	ND (0.10)		3113B		2	KJK	12/21/17 22:36	100	20	CL71954
Chromium	ND (4.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Copper	ND (4.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Iron	**5230** (20.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Lead	**EL** ND (4.0)		3113B		4	KJK	12/21/17 18:26	100	20	CL71954
Mercury	ND (0.20)		245.1		1	MJV	12/21/17 15:02	20	40	CL71927
Nickel	ND (10.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Selenium	ND (4.0)		3113B		2	KJK	12/20/17 19:59	100	20	CL71954
Silver	ND (2.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954
Zinc	ND (10.0)		200.7		1	KJK	12/20/17 21:00	100	20	CL71954

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (10.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Arsenic	ND (2.0)		3113B		2	KJK	12/20/17 23:38	100	20	CL71954
Cadmium	ND (0.10)		3113B		2	KJK	12/21/17 22:30	100	20	CL71954
Chromium	ND (4.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Chromium III	ND (10.0)		200.7		1	JLK	12/20/17 20:55	1	1	[CALC]
Copper	ND (4.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Hardness	**406000** (999)		200.7		10	KJK	12/21/17 11:10	1	1	[CALC]
Iron	**5450** (20.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Lead	**EL** ND (4.0)		3113B		4	KJK	12/21/17 18:21	100	20	CL71954
Mercury	ND (0.200)		245.1		1	MJV	12/21/17 14:59	20	40	CL71927
Nickel	ND (10.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Selenium	ND (4.0)		3113B		2	KJK	12/20/17 19:42	100	20	CL71954
Silver	ND (1.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954
Zinc	ND (10.0)		200.7		1	KJK	12/20/17 20:55	100	20	CL71954

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC

524.2 Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,1,2-Trichloroethane	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,1-Dichloroethane	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,1-Dichloroethene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,2-Dichlorobenzene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,2-Dichloroethane	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,3-Dichlorobenzene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
1,4-Dichlorobenzene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Acetone	ND (5.0)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Benzene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Carbon Tetrachloride	ND (0.3)		524.2		1	12/26/17 16:22	C7L0384	CL72632
cis-1,2-Dichloroethene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Ethylbenzene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Methylene Chloride	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Naphthalene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Tetrachloroethene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Toluene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Trichloroethene	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Vinyl Chloride	ND (0.2)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Xylene O	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632
Xylene P,M	ND (0.5)		524.2		1	12/26/17 16:22	C7L0384	CL72632

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*106 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*105 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: CAD
Prepared: 12/20/17 9:37

608 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1221	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1232	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1242	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1248	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1254	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1260	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1262	ND (0.09)		608		1	12/20/17 19:15		CL72003
Aroclor 1268	ND (0.09)		608		1	12/20/17 19:15		CL72003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*65 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*56 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*47 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/26/17 15:07

625(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	**0.95** (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Acenaphthylene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Anthracene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Benzo(a)anthracene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Benzo(a)pyrene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Benzo(b)fluoranthene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Benzo(g,h,i)perylene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Benzo(k)fluoranthene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
bis(2-Ethylhexyl)phthalate	ND (2.34)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Butylbenzylphthalate	ND (1.87)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Chrysene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Dibenzo(a,h)Anthracene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Diethylphthalate	ND (2.34)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Dimethylphthalate	ND (2.34)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Di-n-butylphthalate	ND (2.34)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Di-n-octylphthalate	ND (2.34)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Fluoranthene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Fluorene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Indeno(1,2,3-cd)Pyrene	ND (0.05)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Naphthalene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Pentachlorophenol	ND (0.84)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Phenanthrene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633
Pyrene	ND (0.19)		625 SIM		1	12/26/17 22:00	C7L0385	CL72633

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*56 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*197 %*	*S+*	*15-110*
Surrogate: 2-Fluorobiphenyl	*68 %*		*30-130*
Surrogate: Nitrobenzene-d5	*80 %*		*30-130*
Surrogate: p-Terphenyl-d14	*73 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 12/20/17 12:45

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	**0.497** (0.250)		8270D SIM		1	12/21/17 3:43	C7L0309	CL71932

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	*33 %*		*15-115*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**3.19** (0.10)		350.1		1	JLK	12/22/17 17:15	mg/L	CL72217
Chloride	**995** (500)		300.0		1000	EEM	12/21/17 18:43	mg/L	CL72116
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	JLK	12/19/17 21:21	ug/L	CL71940
Phenols	ND (100)		420.1		1	JLK	12/21/17 18:15	ug/L	CL72142
Total Cyanide (LL)	ND (5.00)		4500 CN CE		1	EEM	12/21/17 10:55	ug/L	CL72117
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	12/26/17 14:18	mg/L	CL72219
Total Residual Chlorine	ND (20.0)		4500Cl D		1	JLK	12/19/17 22:23	ug/L	CL71951
Total Suspended Solids	**18** (5)		2540D		1	EEM	12/21/17 15:10	mg/L	CL72119

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 12/22/17 11:10

504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)		504.1		1	12/22/17 15:52		CL72227

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*134 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*138 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP
Client Sample ID: 1701323-B-1 OW
Date Sampled: 12/19/17 11:00
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1712438
ESS Laboratory Sample ID: 1712438-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: ZLC
Prepared: 12/21/17 12:22

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	ZLC	12/21/17 14:41		CL72129

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch CL71927 - 245.1/7470A										
Blank										
Mercury	ND	0.20	ug/L							
LCS										
Mercury	5.87	0.20	ug/L	6.000		98	85-115			
LCS Dup										
Mercury	5.87	0.20	ug/L	6.000		98	85-115	0.03	20	
Batch CL71954 - 3005A/200.7										
Blank										
Antimony	ND	10.0	ug/L							
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.05	ug/L							
Chromium	ND	4.0	ug/L							
Copper	ND	4.0	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	10.0	ug/L							
Selenium	ND	2.0	ug/L							
Silver	ND	2.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Antimony	92.3	10.0	ug/L	100.0		92	85-115			
Arsenic	99.0	25.0	ug/L	100.0		99	85-115			
Cadmium	42.5	25.0	ug/L	50.00		85	85-115			
Chromium	94.2	4.0	ug/L	100.0		94	80-120			
Copper	98.2	4.0	ug/L	100.0		98	80-120			
Iron	467	20.0	ug/L	500.0		93	80-120			
Lead	97.0	25.0	ug/L	100.0		97	85-115			
Nickel	93.0	10.0	ug/L	100.0		93	85-115			
Selenium	194	50.0	ug/L	200.0		97	85-115			
Silver	49.9	2.0	ug/L	50.00		100	85-115			
Zinc	94.1	10.0	ug/L	100.0		94	85-115			
LCS Dup										
Arsenic	104	25.0	ug/L	100.0		104	85-115	5	20	
Cadmium	45.1	25.0	ug/L	50.00		90	85-115	6	20	
Lead	102	25.0	ug/L	100.0		102	85-115	5	20	
Selenium	203	50.0	ug/L	200.0		101	85-115	4	20	
Total Metals										
Batch CL71927 - 245.1/7470A										
Blank										
Mercury	ND	0.200	ug/L							
LCS										
Mercury	5.87	0.200	ug/L	6.000		98	85-115			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CL71927 - 245.1/7470A										
LCS Dup										
Mercury	5.87	0.200	ug/L	6.000		98	85-115	0.03	20	
Batch CL71940 - [CALC]										
Blank										
Chromium III	ND	10.0	ug/L							
LCS										
Chromium III	ND		ug/L							
LCS Dup										
Chromium III	ND		ug/L							
Batch CL71954 - 3005A/200.7										
Blank										
Antimony	ND	10.0	ug/L							
Arsenic	ND	1.0	ug/L							
Cadmium	ND	0.05	ug/L							
Chromium	ND	4.0	ug/L							
Chromium III	ND	4.00	ug/L							
Copper	ND	4.0	ug/L							
Hardness	ND	165	ug/L							
Iron	ND	20.0	ug/L							
Lead	ND	1.0	ug/L							
Nickel	ND	10.0	ug/L							
Selenium	ND	2.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	10.0	ug/L							
LCS										
Antimony	92.3	10.0	ug/L	100.0		92	85-115			
Arsenic	99.0	25.0	ug/L	100.0		99	85-115			
Cadmium	42.5	25.0	ug/L	50.00		85	85-115			
Chromium	94.2	4.0	ug/L	100.0		94	85-115			
Chromium III	94.2	4.00	ug/L							
Copper	98.2	4.0	ug/L	100.0		98	85-115			
Hardness	6300	165	ug/L							
Iron	467	20.0	ug/L	500.0		93	85-115			
Lead	97.0	25.0	ug/L	100.0		97	85-115			
Nickel	93.0	10.0	ug/L	100.0		93	85-115			
Selenium	194	50.0	ug/L	200.0		97	85-115			
Silver	49.9	1.0	ug/L	50.00		100	85-115			
Zinc	94.1	10.0	ug/L	100.0		94	85-115			
LCS Dup										
Arsenic	104	25.0	ug/L	100.0		104	85-115	5	20	
Cadmium	45.1	25.0	ug/L	50.00		90	85-115	6	20	
Chromium III	94.8	4.00	ug/L							
Hardness	6210	165	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CL71954 - 3005A/200.7										
Lead	102	25.0	ug/L	100.0		102	85-115	5	20	
Selenium	203	50.0	ug/L	200.0		101	85-115	4	20	
524.2 Volatile Organic Compounds										
Batch CL72632 - 524.2										
Blank										
1,1,1-Trichloroethane	ND	0.5	ug/L							
1,1,2-Trichloroethane	ND	0.5	ug/L							
1,1-Dichloroethane	ND	0.5	ug/L							
1,1-Dichloroethene	ND	0.5	ug/L							
1,2-Dichlorobenzene	ND	0.5	ug/L							
1,2-Dichloroethane	ND	0.5	ug/L							
1,3-Dichlorobenzene	ND	0.5	ug/L							
1,4-Dichlorobenzene	ND	0.5	ug/L							
Acetone	ND	5.0	ug/L							
Benzene	ND	0.5	ug/L							
Carbon Tetrachloride	ND	0.3	ug/L							
cis-1,2-Dichloroethene	ND	0.5	ug/L							
Ethylbenzene	ND	0.5	ug/L							
Methyl tert-Butyl Ether	ND	0.5	ug/L							
Methylene Chloride	ND	0.5	ug/L							
Naphthalene	ND	0.5	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tertiary-butyl Alcohol	ND	25.0	ug/L							
Tetrachloroethene	ND	0.5	ug/L							
Toluene	ND	0.5	ug/L							
Trichloroethene	ND	0.5	ug/L							
Vinyl Chloride	ND	0.2	ug/L							
Xylene O	ND	0.5	ug/L							
Xylene P,M	ND	0.5	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*5.22*		ug/L	*5.000*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*5.18*		ug/L	*5.000*		*104*	*80-120*			
LCS										
1,1,1-Trichloroethane	10.6		ug/L	10.00		106	70-130			
1,1,2-Trichloroethane	10.2		ug/L	10.00		102	70-130			
1,1-Dichloroethane	10.3		ug/L	10.00		103	70-130			
1,1-Dichloroethene	11.2		ug/L	10.00		112	70-130			
1,2-Dichlorobenzene	10.6		ug/L	10.00		106	70-130			
1,2-Dichloroethane	11.0		ug/L	10.00		110	70-130			
1,3-Dichlorobenzene	10.5		ug/L	10.00		105	70-130			
1,4-Dichlorobenzene	10.6		ug/L	10.00		106	70-130			
Acetone	61.1		ug/L	50.00		122	70-130			
Benzene	10.6		ug/L	10.00		106	70-130			
Carbon Tetrachloride	10.5		ug/L	10.00		105	70-130			
cis-1,2-Dichloroethene	10.7		ug/L	10.00		107	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch CL72632 - 524.2										
Ethylbenzene	10.8		ug/L	10.00		108	70-130			
Methyl tert-Butyl Ether	10.8		ug/L	10.00		108	70-130			
Methylene Chloride	12.5		ug/L	10.00		125	70-130			
Naphthalene	10.6		ug/L	10.00		106	70-130			
Tertiary-amyl methyl ether	10.7		ug/L	10.00		107	70-130			
Tertiary-butyl Alcohol	60.5		ug/L	50.00		121	70-130			
Tetrachloroethene	10.7		ug/L	10.00		107	70-130			
Toluene	10.6		ug/L	10.00		106	70-130			
Trichloroethene	10.9		ug/L	10.00		109	70-130			
Vinyl Chloride	10.4		ug/L	10.00		104	70-130			
Xylene O	10.2		ug/L	10.00		102	70-130			
Xylene P,M	20.3		ug/L	20.00		102	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*5.13*		ug/L	*5.000*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*5.09*		ug/L	*5.000*		*102*	*80-120*			
LCS Dup										
1,1,1-Trichloroethane	10.7		ug/L	10.00		107	70-130	1	20	
1,1,2-Trichloroethane	10.3		ug/L	10.00		103	70-130	0.6	20	
1,1-Dichloroethane	10.4		ug/L	10.00		104	70-130	0.7	20	
1,1-Dichloroethene	11.3		ug/L	10.00		113	70-130	1	20	
1,2-Dichlorobenzene	10.6		ug/L	10.00		106	70-130	0.8	20	
1,2-Dichloroethane	11.4		ug/L	10.00		114	70-130	3	20	
1,3-Dichlorobenzene	10.4		ug/L	10.00		104	70-130	0.4	20	
1,4-Dichlorobenzene	10.6		ug/L	10.00		106	70-130	0.09	20	
Acetone	59.2		ug/L	50.00		118	70-130	3	20	
Benzene	10.8		ug/L	10.00		108	70-130	1	20	
Carbon Tetrachloride	10.6		ug/L	10.00		106	70-130	1	20	
cis-1,2-Dichloroethene	10.7		ug/L	10.00		107	70-130	0.3	20	
Ethylbenzene	10.7		ug/L	10.00		107	70-130	0.7	20	
Methyl tert-Butyl Ether	11.0		ug/L	10.00		110	70-130	2	20	
Methylene Chloride	12.5		ug/L	10.00		125	70-130	0.08	20	
Naphthalene	10.6		ug/L	10.00		106	70-130	0.2	20	
Tertiary-amyl methyl ether	10.6		ug/L	10.00		106	70-130	0.5	20	
Tertiary-butyl Alcohol	63.5		ug/L	50.00		127	70-130	5	25	
Tetrachloroethene	10.7		ug/L	10.00		107	70-130	0.8	20	
Toluene	10.7		ug/L	10.00		107	70-130	0.4	20	
Trichloroethene	10.8		ug/L	10.00		108	70-130	0.2	20	
Vinyl Chloride	10.1		ug/L	10.00		101	70-130	3	20	
Xylene O	10.2		ug/L	10.00		102	70-130	0.2	20	
Xylene P,M	20.3		ug/L	20.00		102	70-130	0.2	20	
Surrogate: 1,2-Dichlorobenzene-d4	*5.17*		ug/L	*5.000*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*5.07*		ug/L	*5.000*		*101*	*80-120*			
608 Polychlorinated Biphenyls (PCB)										
Batch CL72003 - 3510C										
Blank										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608 Polychlorinated Biphenyls (PCB)										
Batch CL72003 - 3510C										
Aroclor 1016	ND	0.10	ug/L							
Aroclor 1016 [2C]	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1221 [2C]	ND	0.10	ug/L							
Aroclor 1232	ND	0.10	ug/L							
Aroclor 1232 [2C]	ND	0.10	ug/L							
Aroclor 1242	ND	0.10	ug/L							
Aroclor 1242 [2C]	ND	0.10	ug/L							
Aroclor 1248	ND	0.10	ug/L							
Aroclor 1248 [2C]	ND	0.10	ug/L							
Aroclor 1254	ND	0.10	ug/L							
Aroclor 1254 [2C]	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1260 [2C]	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1262 [2C]	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							
Aroclor 1268 [2C]	ND	0.10	ug/L							
Surrogate: Decachlorobiphenyl	*0.0449*		ug/L	*0.05000*		*90*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0511*		ug/L	*0.05000*		*102*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0364*		ug/L	*0.05000*		*73*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0419*		ug/L	*0.05000*		*84*	*30-150*			
LCS										
Aroclor 1016	0.87	0.10	ug/L	1.000		87	40-140			
Aroclor 1016 [2C]	0.97	0.10	ug/L	1.000		97	40-140			
Aroclor 1260	0.90	0.10	ug/L	1.000		90	40-140			
Aroclor 1260 [2C]	1.03	0.10	ug/L	1.000		103	40-140			
Surrogate: Decachlorobiphenyl	*0.0531*		ug/L	*0.05000*		*106*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0600*		ug/L	*0.05000*		*120*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0416*		ug/L	*0.05000*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0448*		ug/L	*0.05000*		*90*	*30-150*			
LCS Dup										
Aroclor 1016	0.99	0.10	ug/L	1.000		99	40-140	13	20	
Aroclor 1016 [2C]	1.06	0.10	ug/L	1.000		106	40-140	9	20	
Aroclor 1260	1.00	0.10	ug/L	1.000		100	40-140	10	20	
Aroclor 1260 [2C]	1.11	0.10	ug/L	1.000		111	40-140	7	20	
Surrogate: Decachlorobiphenyl	*0.0519*		ug/L	*0.05000*		*104*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0575*		ug/L	*0.05000*		*115*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0450*		ug/L	*0.05000*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0464*		ug/L	*0.05000*		*93*	*30-150*			
625(SIM) Semi-Volatile Organic Compounds										
Batch CL72633 - 3510C										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625(SIM) Semi-Volatile Organic Compounds										
Batch CL72633 - 3510C										
Blank										
Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
bis(2-Ethylhexyl)phthalate	ND	2.50	ug/L							
Butylbenzylphthalate	ND	2.00	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	2.83	2.50	ug/L							
Di-n-octylphthalate	ND	2.50	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Pentachlorophenol	ND	0.90	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*1.42*		ug/L	*2.500*		*57*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*6.55*		ug/L	*3.750*		*175*	*15-110*			*S+*
Surrogate: 2-Fluorobiphenyl	*1.61*		ug/L	*2.500*		*64*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.90*		ug/L	*2.500*		*76*	*30-130*			
Surrogate: p-Terphenyl-d14	*1.70*		ug/L	*2.500*		*68*	*30-130*			
LCS										
Acenaphthene	2.95	0.20	ug/L	4.000		74	40-140			
Acenaphthylene	2.93	0.20	ug/L	4.000		73	40-140			
Anthracene	2.96	0.20	ug/L	4.000		74	40-140			
Benzo(a)anthracene	3.06	0.05	ug/L	4.000		77	40-140			
Benzo(a)pyrene	3.22	0.05	ug/L	4.000		80	40-140			
Benzo(b)fluoranthene	3.32	0.05	ug/L	4.000		83	40-140			
Benzo(g,h,i)perylene	3.23	0.20	ug/L	4.000		81	40-140			
Benzo(k)fluoranthene	3.10	0.05	ug/L	4.000		77	40-140			
bis(2-Ethylhexyl)phthalate	3.98	2.50	ug/L	4.000		100	40-140			
Butylbenzylphthalate	4.25	2.50	ug/L	4.000		106	40-140			
Chrysene	3.09	0.05	ug/L	4.000		77	40-140			
Dibenzo(a,h)Anthracene	3.24	0.05	ug/L	4.000		81	40-140			
Diethylphthalate	3.48	2.50	ug/L	4.000		87	40-140			
Dimethylphthalate	3.39	2.50	ug/L	4.000		85	40-140			
Di-n-butylphthalate	5.57	2.50	ug/L	4.000		139	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625(SIM) Semi-Volatile Organic Compounds										
Batch CL72633 - 3510C										
Di-n-octylphthalate	4.28	2.50	ug/L	4.000		107	40-140			
Fluoranthene	3.21	0.20	ug/L	4.000		80	40-140			
Fluorene	3.04	0.20	ug/L	4.000		76	40-140			
Indeno(1,2,3-cd)Pyrene	3.34	0.05	ug/L	4.000		84	40-140			
Naphthalene	2.72	0.20	ug/L	4.000		68	40-140			
Pentachlorophenol	4.13	0.90	ug/L	4.000		103	30-130			
Phenanthrene	2.94	0.20	ug/L	4.000		74	40-140			
Pyrene	3.37	0.20	ug/L	4.000		84	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*1.71*		ug/L	*2.500*		*69*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*7.67*		ug/L	*3.750*		*204*	*15-110*			*S+*
Surrogate: 2-Fluorobiphenyl	*1.96*		ug/L	*2.500*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.25*		ug/L	*2.500*		*90*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.08*		ug/L	*2.500*		*83*	*30-130*			
LCS Dup										
Acenaphthene	2.69	0.20	ug/L	4.000		67	40-140	9	20	
Acenaphthylene	2.70	0.20	ug/L	4.000		68	40-140	8	20	
Anthracene	2.83	0.20	ug/L	4.000		71	40-140	4	20	
Benzo(a)anthracene	3.01	0.05	ug/L	4.000		75	40-140	2	20	
Benzo(a)pyrene	3.22	0.05	ug/L	4.000		80	40-140	0.09	20	
Benzo(b)fluoranthene	3.16	0.05	ug/L	4.000		79	40-140	5	20	
Benzo(g,h,i)perylene	3.16	0.20	ug/L	4.000		79	40-140	2	20	
Benzo(k)fluoranthene	3.23	0.05	ug/L	4.000		81	40-140	4	20	
bis(2-Ethylhexyl)phthalate	3.93	2.50	ug/L	4.000		98	40-140	1	20	
Butylbenzylphthalate	4.28	2.50	ug/L	4.000		107	40-140	0.7	20	
Chrysene	3.03	0.05	ug/L	4.000		76	40-140	2	20	
Dibenzo(a,h)Anthracene	3.18	0.05	ug/L	4.000		79	40-140	2	20	
Diethylphthalate	3.13	2.50	ug/L	4.000		78	40-140	11	20	
Dimethylphthalate	3.09	2.50	ug/L	4.000		77	40-140	9	20	
Di-n-butylphthalate	5.36	2.50	ug/L	4.000		134	40-140	4	20	
Di-n-octylphthalate	4.30	2.50	ug/L	4.000		108	40-140	0.6	20	
Fluoranthene	3.02	0.20	ug/L	4.000		76	40-140	6	20	
Fluorene	2.88	0.20	ug/L	4.000		72	40-140	6	20	
Indeno(1,2,3-cd)Pyrene	3.29	0.05	ug/L	4.000		82	40-140	2	20	
Naphthalene	2.55	0.20	ug/L	4.000		64	40-140	7	20	
Pentachlorophenol	3.88	0.90	ug/L	4.000		97	30-130	6	20	
Phenanthrene	2.74	0.20	ug/L	4.000		68	40-140	7	20	
Pyrene	3.29	0.20	ug/L	4.000		82	40-140	2	20	
Surrogate: 1,2-Dichlorobenzene-d4	*1.37*		ug/L	*2.500*		*55*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*6.40*		ug/L	*3.750*		*171*	*15-110*			*S+*
Surrogate: 2-Fluorobiphenyl	*1.60*		ug/L	*2.500*		*64*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.90*		ug/L	*2.500*		*76*	*30-130*			
Surrogate: p-Terphenyl-d14	*1.83*		ug/L	*2.500*		*73*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch CL71932 - 3535A										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch CL71932 - 3535A										
Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	*2.84*		ug/L	*5.000*		*57*	*15-115*			
LCS										
1,4-Dioxane	10.2	0.250	ug/L	10.00		102	40-140			
Surrogate: 1,4-Dioxane-d8	*3.03*		ug/L	*5.000*		*61*	*15-115*			
LCS Dup										
1,4-Dioxane	8.62	0.250	ug/L	10.00		86	40-140	16	20	
Surrogate: 1,4-Dioxane-d8	*3.81*		ug/L	*5.000*		*76*	*15-115*			
Classical Chemistry										
Batch CL71940 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	0.495		mg/L	0.4998		99	90-110			
LCS Dup										
Hexavalent Chromium	0.494		mg/L	0.4998		99	90-110	0.2	20	
Batch CL71951 - General Preparation										
Blank										
Total Residual Chlorine	ND	20.0	ug/L							
LCS										
Total Residual Chlorine	1.80		mg/L	1.800		100	85-115			
Batch CL72116 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	2.4		mg/L	2.500		96	90-110			
Batch CL72117 - TCN Prep										
Blank										
Total Cyanide (LL)	ND	5.00	ug/L							
LCS										
Total Cyanide (LL)	20.6	5.00	ug/L	20.06		103	90-110			
LCS										
Total Cyanide (LL)	150	5.00	ug/L	150.4		100	90-110			
LCS Dup										
Total Cyanide (LL)	149	5.00	ug/L	150.4		99	90-110	0.4	20	
Batch CL72119 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch CL72119 - General Preparation										
LCS										
Total Suspended Solids	32		mg/L	34.10		94	80-120			
Batch CL72142 - General Preparation										
Blank										
Phenols	ND	100	ug/L							
LCS										
Phenols	114	100	ug/L	100.0		114	80-120			
LCS										
Phenols	1000	100	ug/L	1000		100	80-120			
Batch CL72217 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.09	0.10	mg/L	0.09994		92	80-120			
LCS										
Ammonia as N	1.01	0.10	mg/L	0.9994		101	80-120			
Batch CL72219 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	18	5	mg/L	19.38		93	66-114			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch CL72227 - 504/8011										
Blank										
1,2-Dibromoethane	ND	0.015	ug/L							
1,2-Dibromoethane [2C]	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.282*		ug/L	*0.2000*		*141*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.286*		ug/L	*0.2000*		*143*	*30-150*			
LCS										
1,2-Dibromoethane	0.078	0.015	ug/L	0.08000		97	70-130			
1,2-Dibromoethane [2C]	0.073	0.015	ug/L	0.08000		91	70-130			
Surrogate: Pentachloroethane	*0.0689*		ug/L	*0.2000*		*34*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0730*		ug/L	*0.2000*		*37*	*30-150*			
LCS										
1,2-Dibromoethane	0.209	0.015	ug/L	0.2000		104	70-130			
1,2-Dibromoethane [2C]	0.190	0.015	ug/L	0.2000		95	70-130			
Surrogate: Pentachloroethane	*0.241*		ug/L	*0.2000*		*121*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.241*		ug/L	*0.2000*		*120*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Alcohol Scan by GC/FID										
Batch CL72129 - No Prep										
Blank										
Ethanol	ND	10	mg/L							
LCS										
Ethanol	1030	10	mg/L	1007		102	60-140			
LCS Dup										
Ethanol	1040	10	mg/L	1007		103	60-140	0.5	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

Notes and Definitions

U	Analyte included in the analysis, but not detected
S+	Surrogate recovery(ies) above upper control limit (S+).
Q	Calibration required quadratic regression (Q).
HT	The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: MIT Vassar St - RGP

ESS Laboratory Work Order: 1712438

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1712438
Date Received: 12/19/2017
Project Due Date: 12/27/2017
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 1.8 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / (No)
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? (Yes) No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / (No)
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	192000	Yes	NA	Yes	VOA Vial - Unpres	NP	
01	192001	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192002	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192003	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192004	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192005	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192006	Yes	No	Yes	VOA Vial - HCl	HCl	
01	192007	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192008	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192009	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192010	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192011	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	192012	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
01	192013	Yes	NA	Yes	1L Poly - Unpres	NP	
01	192016	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 MC 12/20/17 1855
01	192017	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	192018	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	
01	192148	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192149	Yes	NA	Yes	1L Amber - Unpres	NP	
01	192150	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	192151	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	192152	Yes	NA	Yes	500 mL Poly - HNO3	HNO3	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB/MM

ESS Project ID: 1712438

Date Received: 12/19/2017

2nd Review

Are barcode labels on correct containers? Yes / No

Completed By: _____ Date & Time: 12/19/17 1856

Reviewed By: _____ Date & Time: 12/19/17 1920

Delivered By: _____ 12/19/17 1920

ESS Laboratory

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

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 1712438

Turn Time ____x__ Standard Rush_____ Approved By: _____

Reporting Limits -
Discharge into: Fresh Water ☑ Salt Water ☐

State where samples were collected: **MA NH**

Is this project for: **RGP**

Electonic Deliverable Yes X No____
Format: Excel___ Access___ PDF X Other_____

Project Manager: Heather Ballantyne
Company: GEI Consultants
Address: 400 Unicorn Park Drive
Woburn, MA 01801

Project # 1701323
Project Name: MIT Vassar St
PO #

Analysis

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Containers	RGP Metals Total	RGP Metals Dissolved	Hardness (Calculation)	Ethanol ASTM D3695	Chloride 300.0*	Total Cyanide 4500 LL	TPH 1664	TSS 2540D*	TRC 4500-CL D*	Ammonia 350.1	Tri Cr (Calc. MUST run T. Cr)	Hex Cr 3500	Phenol 420.1	RGP VOC Long List 524	1,4-Dioxane 8270-SIM	EDB 504.1	RGP SVOC Log List 625-SIM	PCB 608	Comment #
1	12/19/2017	11:00	G	GW	1701323-B-1(OW)	22	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	1,2
Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____							4	4	4	1	1	5	3	1	1	3	-	1	3	2	1	2	1	1	
Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA							P	P	P	V	P	P	AG	P	P	P	-	P	AG	V	AG	V	AG	AG	

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

Cooler Present ___√___Yes _____No
Seals Intact ___ Yes ___√___No NA: ___
Cooler Temperature: 1.8 corr 2.0

Sampled by : Molly E Greer

Comments: 1) RGP Metals include Sb, As, Cd, Cu, Fe, Pb, Ni, Se, Ag and Zn by 200.7/3113B and Hg by 245.1
2) Parameters in **BOLD** have Short hold-time **PERMIT ATTACHED**
*** TSS, TRC and Cl taken from the same container**

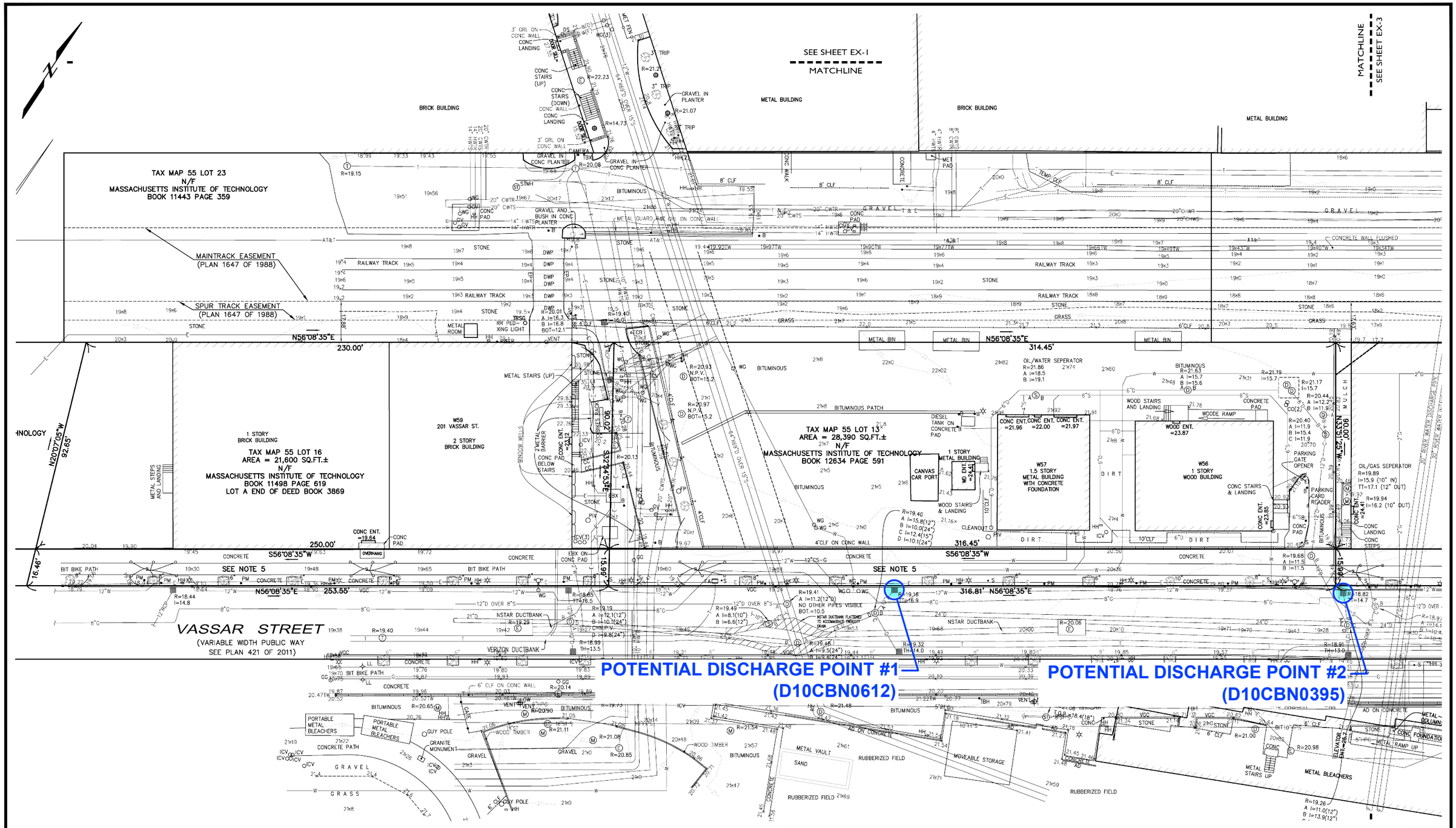
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Molly Greer	12/19/17 1233	[illegible] 12/19/17 1233	[illegible] 12/19/17 1820		12/19/17 1833
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Please E-mail all changes to Chain of Custody in writi

Page ____ of ____

Appendix E

Detailed Plans of Proposed Discharge Points



SOURCE:

1. BASE PLAN FROM *"EXISTING CONDITIONS PLAN BUILDINGS W45, W56, W57, AND W59, MASSACHUSETTS INSTITUTE OF TECHNOLOGY WEST CAMPUS,"* SHEET EX-2 PREPARED BY NITSCH ENGINEERING, REV. A DATED 10/27/2017.

0 40 80

Approximate Scale, Feet

NPDES RGP Notice of Intent
MIT - New Vassar Street Residence Hall
Cambridge, Massachusetts

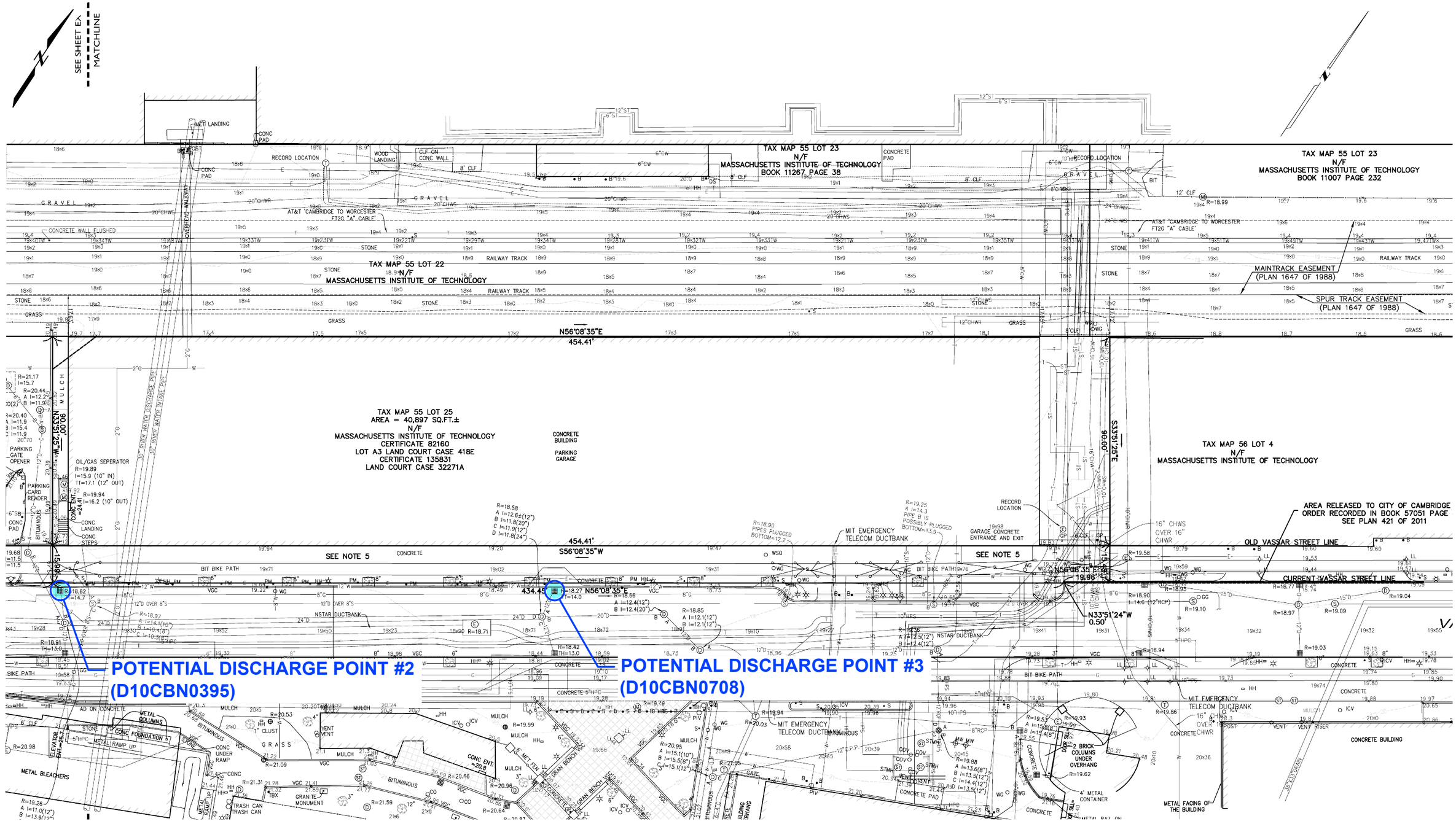
Massachusetts Institute of Technology
Cambridge, Massachusetts

GEI Consultants

POTENTIAL DISCHARGE POINTS

Project 1701323 | February 2018 | Fig. E1

\\geiconsulta B:\Working\MIT\1701323 MIT Vassar Street Residence Hall\00_CAD\Figures\NPDES noi\1701323-01.dwg - 2/13/2018



SOURCE:

1. BASE PLAN FROM *"EXISTING CONDITIONS PLAN BUILDINGS W45, W56, W57, AND W59, MASSACHUSETTS INSTITUTE OF TECHNOLOGY WEST CAMPUS,"* SHEET EX-3 PREPARED BY NITSCH ENGINEERING, REV. A DATED 10/27/2017.

0 40 80

Approximate Scale, Feet

NPDES RGP Notice of Intent
MIT - New Vassar Street Residence Hall
Cambridge, Massachusetts

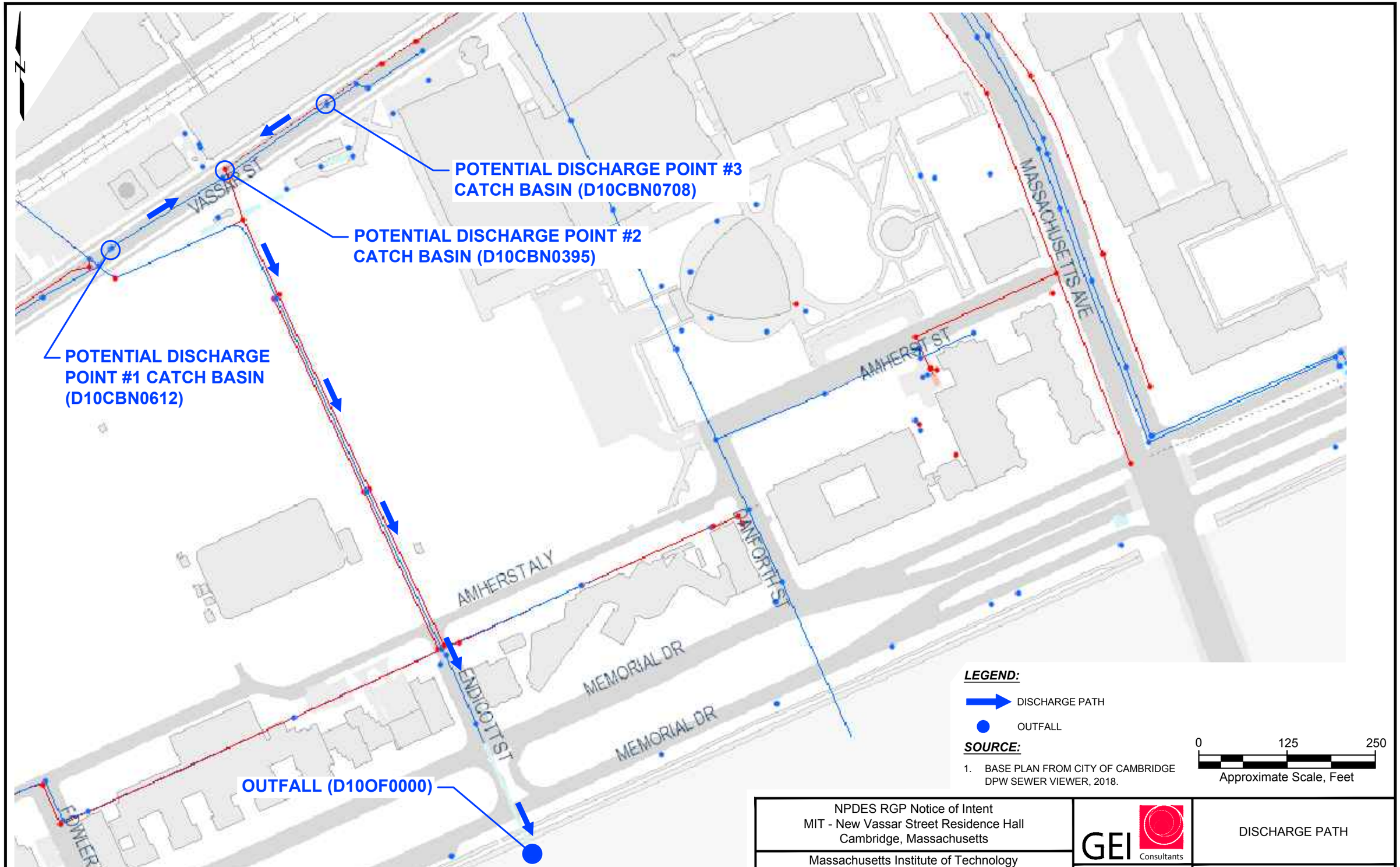
Massachusetts Institute of Technology
Cambridge, Massachusetts

GEI Consultants

POTENTIAL DISCHARGE POINTS

Project 1701323 | February 2018 | Fig. E2

\\geiconsulta B:\Working\MIT\1701323 MIT Vassar Street Residence Hall\00_CAD\Figures\NPDES noi\1701323-01.dwg - 2/13/2018



NPDES RGP Notice of Intent MIT - New Vassar Street Residence Hall Cambridge, Massachusetts	GEI Consultants	DISCHARGE PATH
Massachusetts Institute of Technology Cambridge, Massachusetts	Project 1701323	February 2018 Fig. E3

\\geiconsulta B:\Working\MIT\1701323 MIT Vassar Street Residence Hall\00_CAD\Figures\NPDES noi\1701323-02.dwg - 2/13/2018

Appendix F

Endangered Species Act Eligibility Documentation

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

IPaC resource list

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

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

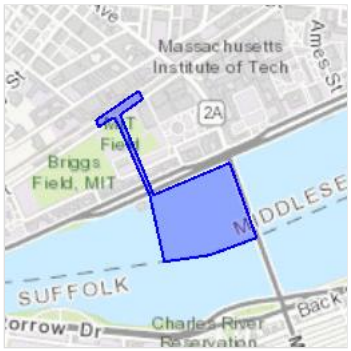
Project information

NAME

New Vassar Street Residence Hall

LOCATION

Middlesex and Suffolk counties, Massachusetts



Local office

New England Ecological Services Field Office

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

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

http://www.fws.gov/newengland

Endangered species

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

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

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

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

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

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

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

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

Migratory birds

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

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

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

Additional information can be found using the following links:

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

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

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD

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

American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Buff-breasted Sandpiper Calidris subruficollis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Cerulean Warbler Dendroica cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 29 to Jul 20
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere
Golden-winged Warbler Vermivora chrysoptera This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Hudsonian Godwit Limosa haemastica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail Rallus elegans This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5

Least Tern Sterna antillarum This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 20 to Sep 10
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-eared Owl asio otus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds elsewhere
Nelson's Sparrow Ammodramus nelsoni This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Sep 5
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Purple Sandpiper Calidris maritima This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Red-throated Loon Gavia stellata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Seaside Sparrow Ammodramus maritimus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 20
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Snowy Owl Bubo scandiacus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

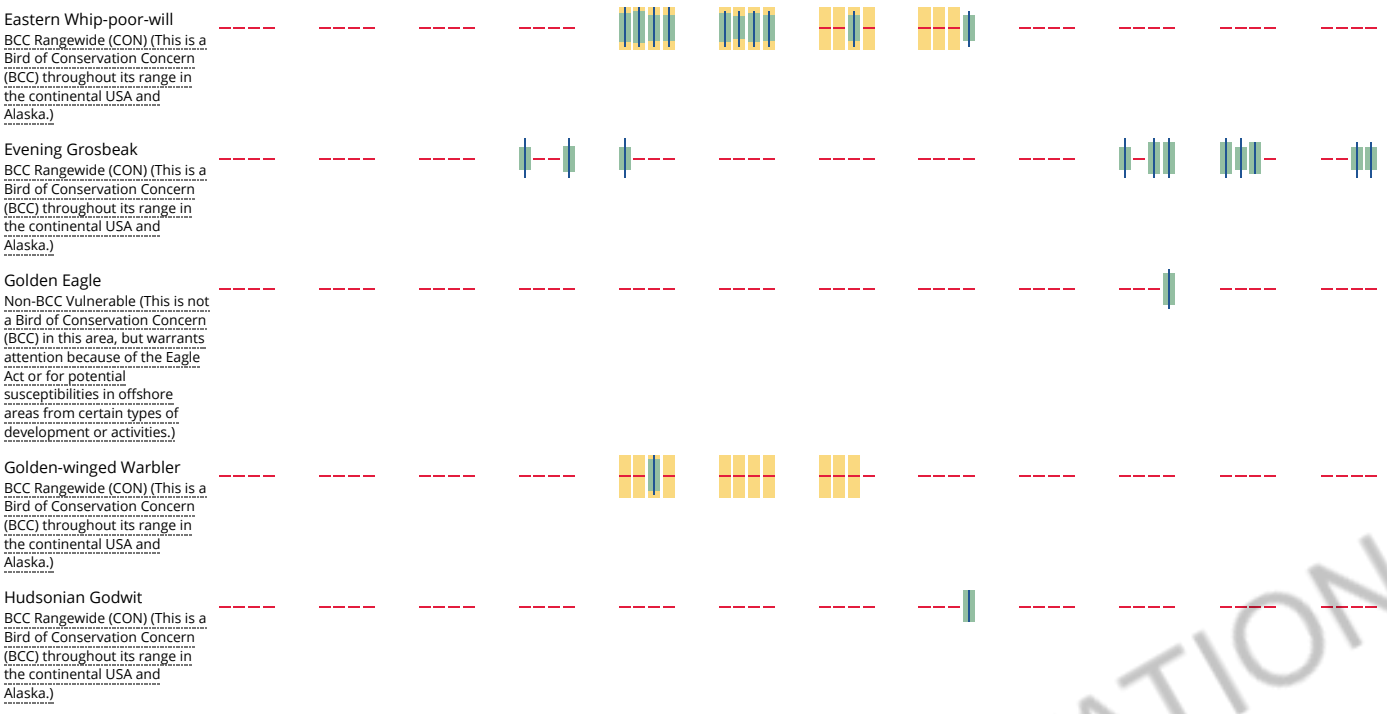
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

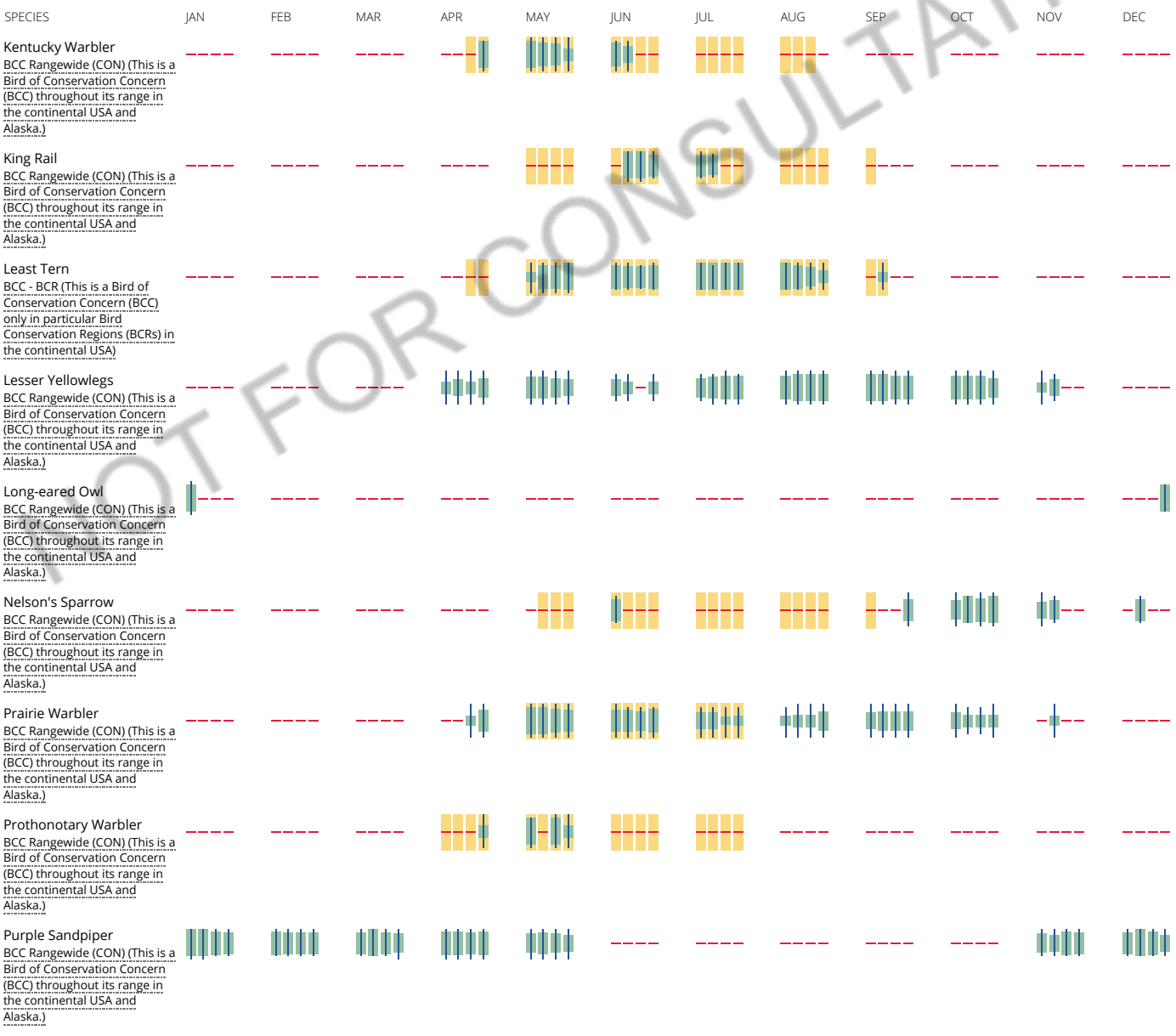
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

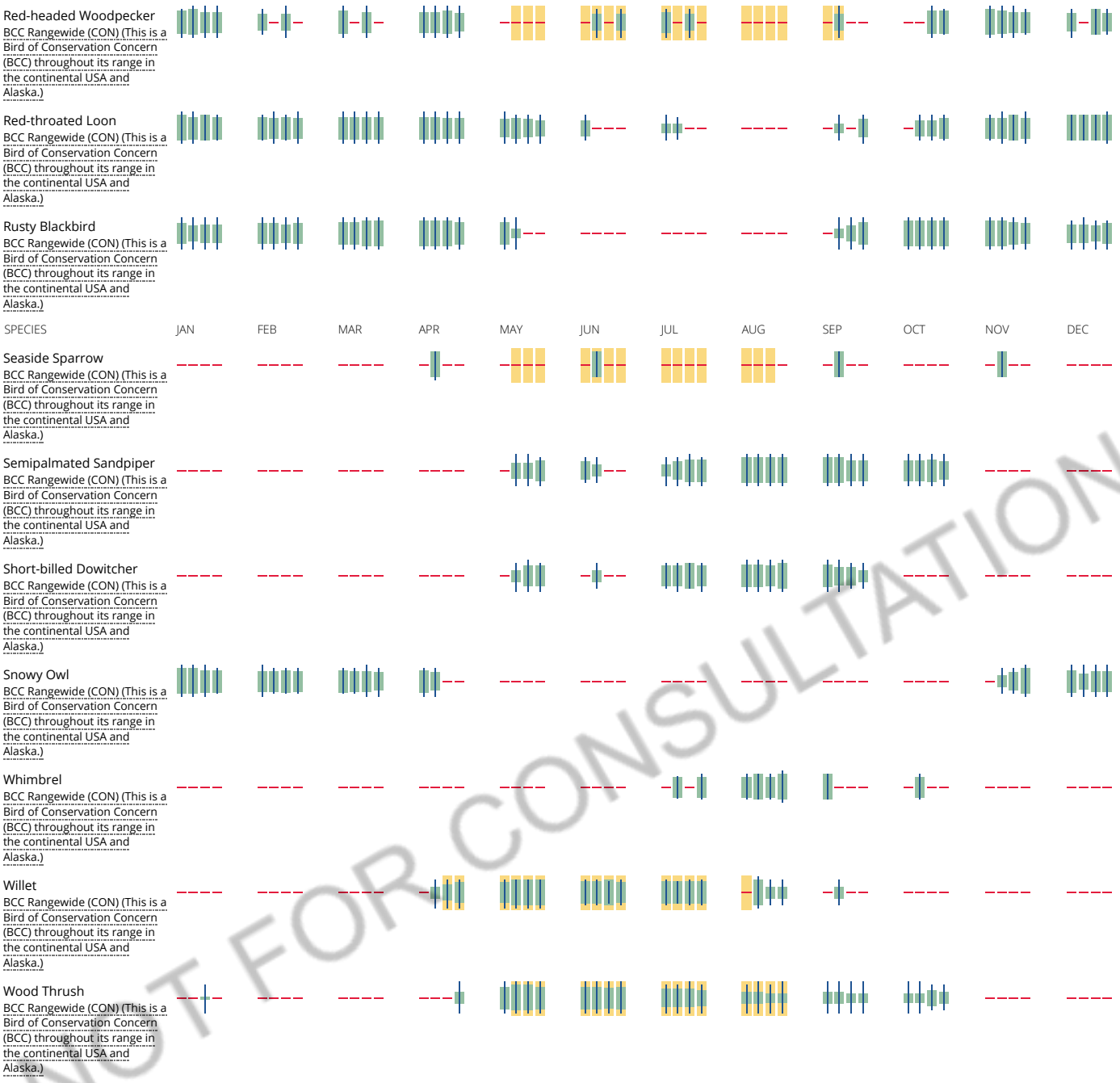
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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

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







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

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

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

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

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

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

This location overlaps the following wetlands:

LAKE

L1UBH

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

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

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

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

Data exclusions

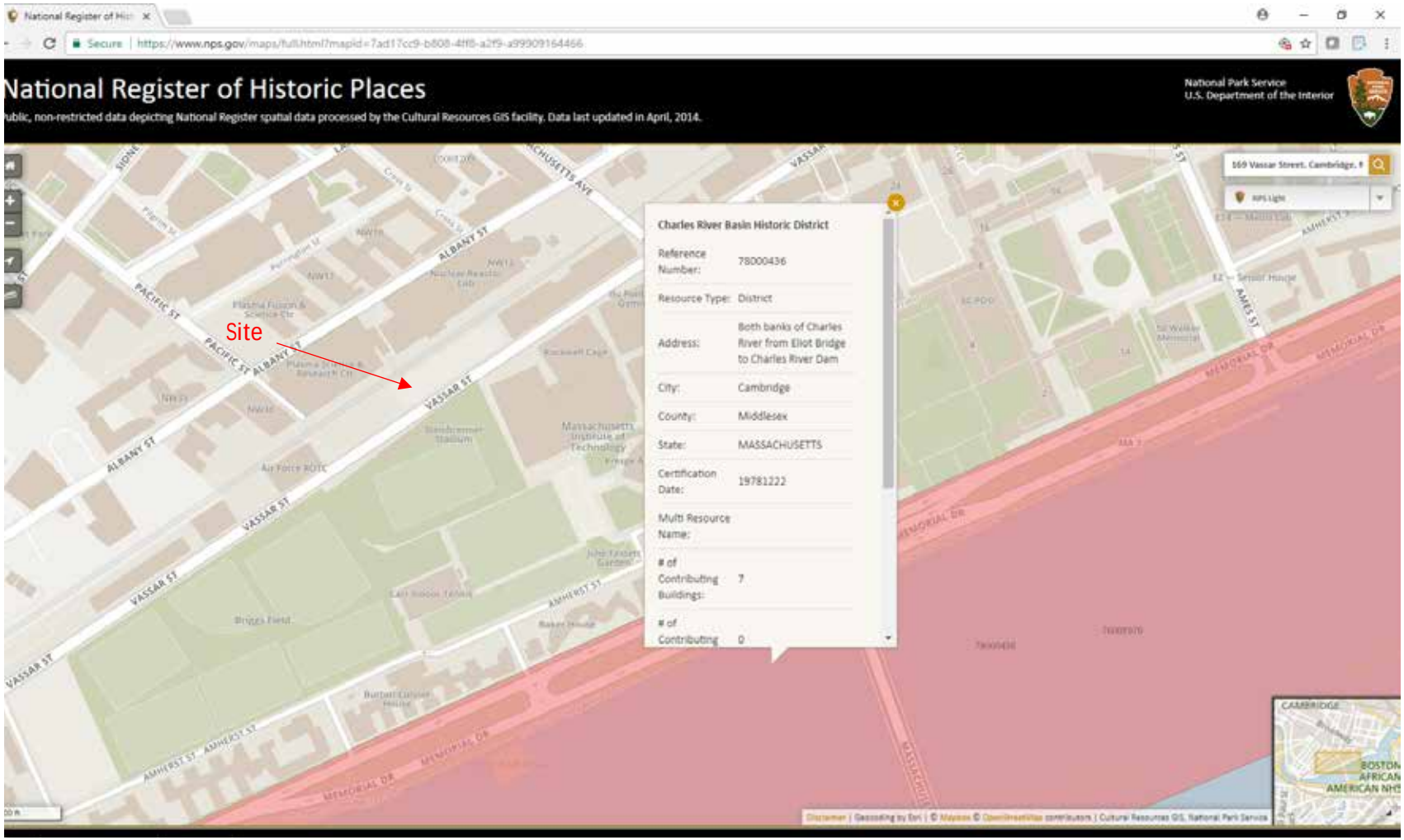
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and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

Data precautions

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

Appendix G

Historic Preservation Documentation


National Register of Historic Places
National Park Service
U.S. Department of the Interior
Site
Charles River Basin Historic District
Reference Number: 78000436
Resource Type: District
Address: Both banks of Charles River from Eliot Bridge to Charles River Dam
City: Cambridge
County: Middlesex
State: MASSACHUSETTS
Certification Date: 19781222
Multi Resource Name:
# of Contributing Buildings: 7
# of Contributing 0
ALBANY ST
VASSAR ST
PACIFIC ST
MEMORIAL DR
AMHERST ST
MASSACHUSETTS AVE

MACRIS MAPS 2.0 beta

About || Help || Disclaimer

169 Vassar Street, Cambridge. I Search

169 Vassar St, Cambridge, Massachusetts, 02139

Bing MassDOT Street View

Legend

MHC Inventory Points

- Nat'l Register of Historic Places
- Preservation Restriction
- Local Historic District
- NRHP and LHD
- Inventoried Property

MHC Inventory Areas

- Nat'l Register of Historic Places
- Preservation Restriction
- Local Historic District
- NRHP and LHD
- Inventoried Area

MHC Towns Completed

- Updates Pending
- Completed
- Not Completed

Archaeology Login

Username:

Password: Login

MACRIS Maps Last Updated 01/30/2018

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

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

Inv. No.	Property Name	Street	Town	Year
CAM.D	Fort Washington Historic District		Cambridge	
CAM.G	Cambridge Multiple Resource Area		Cambridge	
CAM.J	Upper Magazine Street Historic District		Cambridge	
CAM.K	Hastings Square Historic District		Cambridge	
CAM.L	Salem - Auburn Streets Historic District		Cambridge	
CAM.M	Inman Square Historic District		Cambridge	
CAM.N	Old Cambridgeport Historic District		Cambridge	
CAM.O	Norfolk Street Historic District		Cambridge	
CAM.P	Massachusetts Institute of Technology		Cambridge	
CAM.Q	Central Square Historic District		Cambridge	
CAM.AC	Harvard Houses Historic District		Cambridge	
CAM.AJ	Charles River Basin Historic District		Cambridge	
CAM.AK	Boston Woven Hose and Rubber Complex		Cambridge	
CAM.AN	Harvard Riverfront		Cambridge	
CAM.AQ	Davenport - Allen and Endicott Factory		Cambridge	
CAM.AS	Metropolitan Park System of Greater Boston		Cambridge	
CAM.AY	Church of the Blessed Sacrament Catholic Church		Cambridge	
CAM.BA	Immaculate Conception (Lithuanian) Catholic Church		Cambridge	
CAM.BC	Central Square Historic District		Cambridge	
CAM.BH	Volpe Center		Cambridge	
CAM.1353	Standard Plate Glass Company Building	270 Albany St	Cambridge	1920
CAM.359		6-24 Allston St	Cambridge	1946
CAM.522		107 Auburn St	Cambridge	1803
CAM.523		108-110 Auburn St	Cambridge	1803
CAM.524		114 Auburn St	Cambridge	c 1844

Inv. No.	Property Name	Street	Town	Year
CAM.525		119 Auburn St	Cambridge	c 1829
CAM.526		122 Auburn St	Cambridge	c 1840
CAM.527		131 Auburn St	Cambridge	c 1830
CAM.528		134 Auburn St	Cambridge	c 1845
CAM.7	Ellis, Asa House	158 Auburn St	Cambridge	1805
CAM.564	Hotel Eliot	66 Austin St	Cambridge	c 1885
CAM.565	Hotel Austin	70 Austin St	Cambridge	c 1885
CAM.1406	Volpe Center - Shipping and Receiving	182 Binney St	Cambridge	1965
CAM.1388		39 Bishop Allen Dr	Cambridge	
CAM.1397	Hotel Greyburn	77 Bishop Allen Dr	Cambridge	1891
CAM.1386	Squirrel Brand Company Building	8 Boardman St	Cambridge	1915
CAM.1402	Volpe Center - Auditorium	33 Broadway	Cambridge	c 1965
CAM.1409	Close, George Candy Manufacturing Company Building	243 Broadway	Cambridge	1910
CAM.515		301 Brookline Ave	Cambridge	1869
CAM.516		302 Brookline Ave	Cambridge	1887
CAM.517		308 Brookline Ave	Cambridge	1870
CAM.623	Southwick Block	11-19 Brookline St	Cambridge	1911
CAM.535		1353-1369 Cambridge St	Cambridge	1894
CAM.532	Waite Building	1368 Cambridge St	Cambridge	1855
CAM.533	Middlesex Bank Building	1374-1385 Cambridge St	Cambridge	1874
CAM.635	Holmes Block II - Green Block	2-14 Central Sq	Cambridge	1798
CAM.636	Home Realty Building	14 Central Sq	Cambridge	1970
CAM.639	Southwick Building I	15-16 Central Sq	Cambridge	1896
CAM.640	Southwick Building II	17-24 Central Sq	Cambridge	c 1860
CAM.641	White Tower Restaurant	25 Central Sq	Cambridge	1932
CAM.929	Broad Canal	Charles River	Cambridge	1805
CAM.932	Charles River Basin Granite Seawall and Iron Fence	Charles River	Cambridge	
CAM.935	Metropolitan District Commission Swimming Pool	Charles River	Cambridge	
CAM.1320	Metropolitan District Commission Clorination Plant	Charles River	Cambridge	
CAM.1325	M. I. T. - Pierce, Harold Whitworth Boat House	Charles River	Cambridge	1965
CAM.1326	M. I. T. - Wood, Walter C. Sailing Pavilion	Charles River	Cambridge	1976
CAM.1328	Riverside Boat Club	Charles River	Cambridge	r 1910
CAM.543	Boardman, James Double House	Cherry St	Cambridge	1843
CAM.100	Fuller, Margaret House	71 Cherry St	Cambridge	1806
CAM.546		87 Cherry St	Cambridge	c 1845
CAM.545		116-120 Cherry St	Cambridge	c 1845

Inv. No.	Property Name	Street	Town	Year
CAM.544	Eaton, Jacob House	128 Cherry St	Cambridge	c 1844
CAM.542		137-139 Cherry St	Cambridge	c 1840
CAM.537		149-151 Cherry St	Cambridge	c 1830
CAM.538		159-161 Cherry St	Cambridge	c 1830
CAM.547		167 Cherry St	Cambridge	1850
CAM.548		169 Cherry St	Cambridge	1850
CAM.518		105 Chestnut St	Cambridge	1875
CAM.519		111 Chestnut St	Cambridge	1875
CAM.1387		41-43 Columbia St	Cambridge	
CAM.107	Beth Israel Synagogue	238 Columbia St	Cambridge	1901
CAM.600	Coolidge, Flavel House	2 Coolidge Pl	Cambridge	1834
CAM.1369	Blessed Sacrament Roman Catholic Parish School	12 Corporal McTernan St	Cambridge	1924
CAM.112	Valentine Soap Workers' Cottage	5-7 Cottage St	Cambridge	1835
CAM.1212	Mather House - Harvard University	Cowperthwaite St	Cambridge	1967
CAM.124	Sands, Ivory House	145 Elm St	Cambridge	1839
CAM.133	Reardon, Edmund House	195 Erie St	Cambridge	1884
CAM.1371	Blessed Sacrament Roman Catholic Church Convent	203 Erie St	Cambridge	1954
CAM.136	Newman, Andrew House	23 Fairmont St	Cambridge	1823
CAM.1405	Volpe Center - Center Service Building	259 Fifth St	Cambridge	c 1965
CAM.1329	Kennedy, F. A. Steam Bakery	129 Franklin St	Cambridge	1875
CAM.618		133 Green St	Cambridge	c 1894
CAM.624	Raymond, T. H. Warehouse	175 Green St	Cambridge	1908
CAM.1389		205-207 Green St	Cambridge	
CAM.534	Inman Square Fire Station	Hampshire St	Cambridge	1912
CAM.168	Lamson, Rufus House	72-74 Hampshire St	Cambridge	1854
CAM.1367	Massachusetts Avenue Baptist Church	146 Hampshire St	Cambridge	1902
CAM.536	Fay, Samuel P. P. House	172 Harvard St	Cambridge	1805
CAM.549	Allen Block	177-183 Harvard St	Cambridge	r 1875
CAM.520		6 Hastings Sq	Cambridge	1884
CAM.521		75 Henry St	Cambridge	1892
CAM.1343		82-84 Henry St	Cambridge	
CAM.9019	Brown-Rhone, Jill Park	Lafayette Sq	Cambridge	2007
CAM.1319	Magazine Beach Bath House	Magazine Beach	Cambridge	1899
CAM.223	First Baptist Church, Cambridge	5 Magazine St	Cambridge	1881
CAM.637	Church Corners Apartments	8-12 Magazine St	Cambridge	1985
CAM.510	Pilgrim Congregational Church	35 Magazine St	Cambridge	1871

Inv. No.	Property Name	Street	Town	Year
CAM.511	Hinman, Joseph House	48 Magazine St	Cambridge	1875
CAM.512	Brewer, Isaac D. - Pulsifer, William Double House	50-52 Magazine St	Cambridge	1852
CAM.513	Grace Methodist Church	56 Magazine St	Cambridge	1886
CAM.224	Flentje, Ernst House	129 Magazine St	Cambridge	1866
CAM.991	Shell Sign	187 Magazine St	Cambridge	1933
CAM.87	Kendall Square Subway Station	Main St	Cambridge	1912
CAM.225	Kendall Square Substation	Main St	Cambridge	1911
CAM.1308	Davenport - Allen and Endicott Factory Headhouse	Main St	Cambridge	1882
CAM.1309	Davenport - Allen and Endicott Factory East Wing	Main St	Cambridge	1848
CAM.1335	Luke Building	135-145 Main St	Cambridge	1874
CAM.1384	Engine House No. 7	350 Main St	Cambridge	c 1895
CAM.328	Union #2 Engine House	787-789 Main St	Cambridge	1852
CAM.609	Bright Building	853 Main St	Cambridge	1898
CAM.608	Wentworth Building	859-863 Main St	Cambridge	1897
CAM.610	Union Baptist Church	872 Main St	Cambridge	1882
CAM.607	Mellen Building	875 Main St	Cambridge	1897
CAM.606	Andelman, Ezra Building	877-881 Main St	Cambridge	1941
CAM.611	Sawyer, Charles Tenement	882-884 Main St	Cambridge	c 1873
CAM.605	Whitney, Lucretia and Henry Building	893-907 Main St	Cambridge	1870
CAM.226	Mason, Josiah Jr. House	11 Market St	Cambridge	1831
CAM.260	M. I. T. Alumni Swimming Pool Building	Massachusetts Ave	Cambridge	1940
CAM.261	Kresge Auditorium	Massachusetts Ave	Cambridge	1953
CAM.262	M. I. T. Chapel	Massachusetts Ave	Cambridge	1954
CAM.921	Harvard Bridge	Massachusetts Ave	Cambridge	r 1890
CAM.949	Central Square Street Pattern	Massachusetts Ave	Cambridge	c 1630
CAM.334	Cambridge Armory	120 Massachusetts Ave	Cambridge	1902
CAM.332	Metropolitan Storage Warehouse	134 Massachusetts Ave	Cambridge	1895
CAM.1366	New England Confectionery Company Factory	250 Massachusetts Ave	Cambridge	1927
CAM.612	Lamson, The	351-355 Massachusetts Ave	Cambridge	1907
CAM.614	Lafayette Square Fire Station	378 Massachusetts Ave	Cambridge	1893
CAM.613	Shell Gas Station	385 Massachusetts Ave	Cambridge	1948
CAM.615	Salvation Army - Cambridge Citadel	400-402 Massachusetts Ave	Cambridge	1968
CAM.604		401-409 Massachusetts Ave	Cambridge	1966
CAM.603	Taylor, William A. House and Shop	411-413 Massachusetts Ave	Cambridge	1887
CAM.602	Barkin and Gorfinkle Building	415-429 Massachusetts Ave	Cambridge	1925
CAM.616	Kennedy, Frank A. Store	424 Massachusetts Ave	Cambridge	1896

Inv. No.	Property Name	Street	Town	Year
CAM.617	Kutz, Issac Store	428 Massachusetts Ave	Cambridge	c 1910
CAM.229	Kennedy, The	430-442 Massachusetts Ave	Cambridge	1890
CAM.601	Robbins Building	433-447 Massachusetts Ave	Cambridge	1923
CAM.619	Blanchard Building	448-450 Massachusetts Ave	Cambridge	c 1886
CAM.324	South Row	452-458 Massachusetts Ave	Cambridge	1807
CAM.1393	Dana Row - South Row	452-458 Massachusetts Ave	Cambridge	2003
CAM.599	Rogers, F. W. and G. M. Building	453-457 Massachusetts Ave	Cambridge	1885
CAM.620	Freedman Building	460-464 Massachusetts Ave	Cambridge	1933
CAM.598	McDonald's Restaurant	463-467 Massachusetts Ave	Cambridge	1974
CAM.621	Central Square Realty Trust Building	468-480 Massachusetts Ave	Cambridge	1929
CAM.597	Moller's Furniture Store	485 Massachusetts Ave	Cambridge	1926
CAM.622	Longfellow, The	492-498 Massachusetts Ave	Cambridge	1893
CAM.596	Kane's Furniture Store	493-507 Massachusetts Ave	Cambridge	1916
CAM.625	Burger King Restaraunt	506 Massachusetts Ave	Cambridge	1970
CAM.1394	Hovey, Phineas Building	512-514 Massachusetts Ave	Cambridge	1842
CAM.595	Central Trust Building	515-527 Massachusetts Ave	Cambridge	1927
CAM.627	Miller Store	520 Massachusetts Ave	Cambridge	1924
CAM.628	Rosenwald Realty Corporation Building	522-526 Massachusetts Ave	Cambridge	1928
CAM.230	Odd Fellows Hall	536 Massachusetts Ave	Cambridge	1884
CAM.629	Clark - Lamb Building	546-550 Massachusetts Ave	Cambridge	c 1873
CAM.630	Albani Building	552-566 Massachusetts Ave	Cambridge	1925
CAM.592	Bullock, Charles Building	567-569 Massachusetts Ave	Cambridge	1859
CAM.591	Central Square Theater	571-577 Massachusetts Ave	Cambridge	1917
CAM.631	Ginsberg Building - Harvard Bazar	572-590 Massachusetts Ave	Cambridge	1913
CAM.590	Morse, Asa P. Building	579-587 Massachusetts Ave	Cambridge	1893
CAM.589	Cambridgeport National Bank Building	593-597 Massachusetts Ave	Cambridge	1869
CAM.632	Manhattan Market - Purity Supreme Super Market	596-610 Massachusetts Ave	Cambridge	1899
CAM.588	Morse, Asa Second Building	599-601 Massachusetts Ave	Cambridge	1905
CAM.587	Fisk and Coleman Building	603-605 Massachusetts Ave	Cambridge	1892
CAM.633	Prospect House	614-620 Massachusetts Ave	Cambridge	1869
CAM.586	Corcoran, John H. Building	615-627 Massachusetts Ave	Cambridge	1927
CAM.634	Holmes Block I	624-638 Massachusetts Ave	Cambridge	1915
CAM.1395	New Holmes Block	624-638 Massachusetts Ave	Cambridge	1998
CAM.585	Woolworth, F. W. Building	633-641 Massachusetts Ave	Cambridge	1950
CAM.584	Watriss Building	643-649 Massachusetts Ave	Cambridge	1880
CAM.583	Dowse, Thomas House	653-655 Massachusetts Ave	Cambridge	1814
CAM.642	Central Square Building	674 Massachusetts Ave	Cambridge	1926

Inv. No.	Property Name	Street	Town	Year
CAM.643	Chamberlain - Hyde Building	684-688 Massachusetts Ave	Cambridge	1869
CAM.644	Dana Building	692-698 Massachusetts Ave	Cambridge	1872
CAM.645	Southwick Building	700-706 Massachusetts Ave	Cambridge	1908
CAM.646	Norris Building	710-720 Massachusetts Ave	Cambridge	1916
CAM.647	Thayer Building I	722-724 Massachusetts Ave	Cambridge	1863
CAM.648	Thayer Building II	728-730 Massachusetts Ave	Cambridge	1868
CAM.649	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.650	Dobbins and Draper Store	736-750 Massachusetts Ave	Cambridge	1922
CAM.232	Central Square Post Office	770 Massachusetts Ave	Cambridge	1933
CAM.651	Cambridge Senior Center	800-806 Massachusetts Ave	Cambridge	1925
CAM.652	Young Men's Christian Association Building	820-830 Massachusetts Ave	Cambridge	1896
CAM.1396	Brusch Medical Center	825-831 Massachusetts Ave	Cambridge	1951
CAM.653	Saint Peter's Episcopal Church	834 Massachusetts Ave	Cambridge	1867
CAM.654	Modern Manor Apartments	842-864 Massachusetts Ave	Cambridge	1925
CAM.900	Houghton Beech Tree	1000 Massachusetts Ave	Cambridge	
CAM.566	M. I. T. - Pierce, Henry L. Engineering Laboratory	Memorial Dr	Cambridge	1913
CAM.567	M. I. T. - Buildings #2 and #8	Memorial Dr	Cambridge	1913
CAM.568	M. I. T. - Pratt School of Naval Architecture	Memorial Dr	Cambridge	1919
CAM.569	M. I. T. - Homburg Infirmary	Memorial Dr	Cambridge	1927
CAM.570	M. I. T. - Eastman, George Research Laboratories	Memorial Dr	Cambridge	1931
CAM.571	M. I. T. - Rogers, William Barton Building	Memorial Dr	Cambridge	1937
CAM.572	M. I. T. - Walker Memorial	Memorial Dr	Cambridge	1913
CAM.573	M. I. T. - President's House	Memorial Dr	Cambridge	1913
CAM.574	M. I. T. - Senior House	Memorial Dr	Cambridge	1913
CAM.575	M. I. T. - Hayden Library	Memorial Dr	Cambridge	1949
CAM.930	Memorial Drive	Memorial Dr	Cambridge	1896
CAM.933	M. I. T. Memorial Underpass	Memorial Dr	Cambridge	1931
CAM.934	Reid, William J. Overpass	Memorial Dr	Cambridge	1939
CAM.1332	Little, Arthur D. Inc. Building	Memorial Dr	Cambridge	1917
CAM.1398	Lever Brothers Company Administration Building	50 Memorial Dr	Cambridge	1938
CAM.253		100 Memorial Dr	Cambridge	1950
CAM.254	M. I. T. Main Courtyard	182-226 Memorial Dr	Cambridge	1913
CAM.255	Riverbank Court Hotel	305 Memorial Dr	Cambridge	1900
CAM.256	Baker House	362 Memorial Dr	Cambridge	1947
CAM.1327	Boston University Boat House	619 Memorial Dr	Cambridge	1913
CAM.257	B & B Chemical Company	780 Memorial Dr	Cambridge	1937
CAM.258	Peabody Terrace	900 Memorial Dr	Cambridge	1958

Inv. No.	Property Name	Street	Town	Year
CAM.263	Cambridge Neighborhood House	79 Moore St	Cambridge	c 1821
CAM.264	Reversible Collar Company Building	25-27 Mount Auburn St	Cambridge	1860
CAM.557		1-2 Norfolk Pl	Cambridge	1844
CAM.558		3 Norfolk Pl	Cambridge	1846
CAM.593	Powers, Hannah - Ginsberg, Harris Building	7-15 Norfolk St	Cambridge	c 1894
CAM.562	Hotel Norfolk	30 Norfolk St	Cambridge	1886
CAM.560		51 Norfolk St	Cambridge	c 1885
CAM.561		59 Norfolk St	Cambridge	1886
CAM.554		65-67 Norfolk St	Cambridge	1844
CAM.559	Pollard, John House	68-72 Norfolk St	Cambridge	1859
CAM.552		69 Norfolk St	Cambridge	1843
CAM.555		71-73 Norfolk St	Cambridge	1844
CAM.556		75-77 Norfolk St	Cambridge	1844
CAM.551	Fuller, Robert House	79 Norfolk St	Cambridge	1843
CAM.553		87 Norfolk St	Cambridge	1843
CAM.563	Hotel Franklin	90 Norfolk St	Cambridge	1886
CAM.1392	Saint Mary of the Annunciation Catholic Church	134 Norfolk St	Cambridge	r 1865
CAM.550		1-2 Norfolk Terr	Cambridge	1839
CAM.1310	Davenport - Allen and Endicott Factory West Wing	Osborn St	Cambridge	1848
CAM.1311	Davenport - Allen Factory West Wing Extension	Osborn St	Cambridge	1848
CAM.1312	Allen and Endicott Factory Extension	Osborn St	Cambridge	1896
CAM.1313	Allen and Endicott Factory Extension	Osborn St	Cambridge	1896
CAM.276	Urban Rowhouse	30-38 Pearl St	Cambridge	1874
CAM.277	Urban Rowhouse	40-50 Pearl St	Cambridge	1875
CAM.278	Valentine Soap Workers' Cottage	101 Pearl St	Cambridge	1835
CAM.1368	Blessed Sacrament Roman Catholic Church	175 Pearl St	Cambridge	1907
CAM.1370	Blessed Sacrament Roman Catholic Church Rectory	189 Pearl St	Cambridge	1868
CAM.1401	Volpe Center - High Rise Laboratory	2 Potter St	Cambridge	c 1965
CAM.1403	Volpe Center - Space Guidance Building	2 Potter St	Cambridge	c 1965
CAM.1404	Volpe Center - Space Optics Building	2 Potter St	Cambridge	c 1965
CAM.287	Baldwin, Maria House	196 Prospect St	Cambridge	r 1845
CAM.288	Sands, Hiram House	22 Putnam Ave	Cambridge	1848
CAM.923	River Street Bridge	River St	Cambridge	1926
CAM.304	Urban Rowhouse	26-32 River St	Cambridge	1860
CAM.330	Ricker, George and Jerediah House	109-113 River St	Cambridge	1844
CAM.305	River Street Firehouse	176 River St	Cambridge	1890

Inv. No.	Property Name	Street	Town	Year
CAM.922	Boston University Bridge	Rt 2	Cambridge	1928
CAM.529		6-8 Salem St	Cambridge	c 1829
CAM.530		10 Salem St	Cambridge	c 1840
CAM.531		15 Salem St	Cambridge	c 1841
CAM.360	Metropolitan Supply Company Warehouse	269 Vassar St	Cambridge	1948
CAM.361	Hovey, F. A. and Company Warehouse	271-275 Vassar St	Cambridge	c 1940
CAM.362	Metropolitan Supply Company Warehouse	277-287 Vassar St	Cambridge	1939
CAM.363	Metropolitan Supply Company Warehouse	289-293 Vassar St	Cambridge	1939
CAM.541	Whittemore, Rev. Thomas Double House	271-273 Washington St	Cambridge	1837
CAM.540	Whittemore, Rev. Thomas Double House	288 Washington St	Cambridge	1837
CAM.539	Paige, Rev. Lucius R. House	296 Washington St	Cambridge	1837
CAM.988	Fort Washington	95 Waverly St	Cambridge	
CAM.924	Western Avenue Bridge	Western Ave	Cambridge	1924
CAM.638	Cambridge Police Headquarters	5 Western Ave	Cambridge	1933
CAM.948	Central Square Park	22 Western Ave	Cambridge	1987
CAM.321	Read, Cheney House	135 Western Ave	Cambridge	1846
CAM.514	Hixon, Edward House	3 William St	Cambridge	1857
CAM.1378	Immaculate Conception (Lithuanian) Catholic Church	432 Windsor St	Cambridge	1910
CAM.1379	Immaculate Conception (Lithuanian) Church Rectory	432 Windsor St	Cambridge	1972
CAM.1380	Immaculate Conception Church Rectory Metal Garage	432 Windsor St	Cambridge	1941
CAM.1381	Immaculate Conception Church Rectory Wood Garage	432 Windsor St	Cambridge	1948

Form No. 10-300 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Charles River Basin Historic District

AND/OR COMMON: same

2 LOCATION

STREET & NUMBER: multiple

__NOT FOR PUBLICATION

CITY, TOWN: Boston & Cambridge __ VICINITY OF

CONGRESSIONAL DISTRICT: 8th

STATE: Massachusetts CODE: 025 COUNTY: Suffolk, Middlesex CODE: 025, 017

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
X DISTRICT	__PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	X PARK
__STRUCTURE	X BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	X YES: UNRESTRICTED	__INDUSTRIAL	X TRANSPORTATION
		__NO	__MILITARY	__OTHER

4 OWNER OF PROPERTY

NAME: multiple (see continuation sheet)

STREET & NUMBER:

CITY, TOWN: STATE:

__ VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: Suffolk County Registry of Deeds
Middlesex County Registry of Deeds

STREET & NUMBER: ~~Pemberton Square~~
40 Thorndike Street

CITY, TOWN: ~~Boston~~
Cambridge

STATE: Massachusetts

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: Historic American Engineering Record
Inventory of Historic Assets of the Commonwealth

DATE: 1973
1978

X FEDERAL X STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: Library of Congress, Massachusetts Historical Commission

CITY, TOWN: Washington, D.C., Boston, Massachusetts

STATE:

Form No. 10-300a
(Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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DATE ENTERED

CONTINUATION SHEET ITEM NUMBER 4 PAGE 1

The Metropolitan District Commission is the owner of all the land included in this nomination. Several non-profit institutions own buildings on land leased from the M.D.C.

1. Boston University
   725 Commonwealth Avenue
   Boston, MA 02115
   — B.U. Boathouse
   619 Memorial Drive, Cambridge

2. President & Fellows of
   Harvard University
   Cambridge, MA 02138
   — Newell Boathouse
   Soldiers Field Road, Boston

3. Massachusetts Institute of
   Technology
   77 Massachusetts Avenue
   Cambridge, MA 02142
   — Weld Boathouse
   971 Memorial Drive, Cambridge

4. Museum of Science
   Science Park
   Boston, MA 02114
   — Museum buildings and parking garage, Cambridge & Boston

5. Massachusetts Bay Transportation
   Authority
   50 High Street
   Boston, MA 02110
   — Viaduct, Charles River

Metropolitan District Commission
20 Somerset Street
Boston, MA 02114

DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	__UNALTERED	X_ORIGINAL SITE
X GOOD	__RUINS	X_ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Charles River Basin is the keystone of the metropolitan park system in Boston. The park reservations along the edge of the Basin, established in the nineteenth century, still provide the well-utilized recreational space that was envisioned when they were planned. The Charles River Basin National Register District incorporates the Charles River Basin and the parkways and landscaped areas on both banks for approximately six miles upstream from the Charles River Dam to the Eliot Bridge. This area is coterminous with that administered in Boston and Cambridge by the Metropolitan District Commission, a state agency, and incorporates the entire territory between the limits of private property on both sides of the River. It includes Memorial Drive and the Cambridge Parkway in Cambridge; Embankment Road, the James J. Storrow Memorial Drive and Soldiers' Field Road in Boston; the Charles River Dam; seven bridges; two canals; the fresh water basin itself; the parkland surrounding the Basin; and numerous miscellaneous structures. The District lies on the boundary between Boston and Cambridge, and is approximately 820 acres in extent.

The Dam, the canals, the seven bridges that cross the Charles, and the numerous structures in this District display a range of architectural style and civil engineering accomplishment that reflect the evolving technology of the past one hundred years. A brief description of each, beginning at the eastern edge of the district, follows.

I. Charles River Dam

The Charles River Dam was constructed between 1903 and 1910 by the Metropolitan Park Commission under the direction of George A. Kimball, chief engineer. The dam controls the water level of the Charles River Basin by excluding harbor tides from the body of water west (upstream) of the structure. The water level is maintained at Grade 8 above low tide to cover the mud flats and below high tide so as to avoid flooding the former marshes. Adjacent to the dam, on its eastern (downstream) side, is a monumental viaduct, also completed in 1910, that was built to carry the street cars of the Boston Elevated Railway. This is a reinforced concrete structure, 1,738 feet long and 31 feet wide, with granite piers backed by concrete, designed by Robert S. Peabody of the Boston architectural firm of Peabody and Stearns.

The Metropolitan District Commission operates the dam, and maintains the police headquarters, boathouse, and attendant dam and lock buildings on the site (see Continuation Sheets 8 and 9). In 1951, the first unit of the Museum of Science was built on the grounds of the dam, and in 1972, the adjoining parking garage was completed.

II. Bridges

A. Longfellow Bridge

Originally known as the Cambridge Bridge, the present structure was completed in 1906 on the site of the West Boston Bridge of 1793. William Jackson was the chief engineer and Edmund M. Wheelwright the architect. A combination railway and highway bridge 105 feet wide and 1,768 feet long, with eleven steel arch spans supported on masonry piers and two massive abutments flanking the center arch, the Longfellow Bridge is distinguished architecturally by the two pairs of towers, stylistically reminiscent of the Columbian Exposition of 1893, marking the entrance to the Harbor. Henry

Wadsworth Longfellow wrote of an earlier bridge on this site, "I stood on the bridge at midnight as the clocks were striking the hour...."

B. Harvard Bridge

Linking Boston and Cambridge at Massachusetts Avenue, the Harvard Bridge was constructed between 1887 and 1891 under the direction of William Jackson of Boston, chief engineer. A steel structure with alternating cantilevered and suspended 75 foot spans, the bridge has a total length of 2,165 feet, and a 70 foot width including two 9 foot sidewalks. The piers of the bridge, made of granite laid up as ashlar masonry in a Flemish bond pattern, support the highway deck of the structure, which originally had a 48 foot turn-table draw at its center. The cast iron lamp posts and railings that originally ornamented the bridge were replaced with steel fixtures painted green in a reconstruction of 1924-1925.

C. Boston University Bridge

The original bridge on this site was the Cottage Farm Bridge of 1851, while the Grand Junction R.R. crossed at the same location in 1853. The present bridge consists of two structures, a highway bridge above and a railroad bridge on the lower level. It was completed in August, 1928, to a design by Desmond and Lord, architects, and Col. Lewis E. Moore, consulting engineer. John R. Rablin, chief engineer of the Metropolitan District Commission, supervised the construction of this and several other bridges in the Basin.

The railroad bridge is of standard steel plate girder construction. The highway bridge has one main steel arch, painted green, flanked by two reinforced concrete arches, each spanning 100 feet. The main arch, spanning 176 feet, has a two-hinged, non-parallel curved top and bottom chord, with the reinforced concrete roadway suspended through its center. The approaches consist of a combination of reinforced concrete columns and beams, with masonry walls of rough picked concrete trimmed with granite moldings of neoclassical detail.

D. River Street Bridge

Designed by Robert P. Bellows,architect, and constructed in 1926 under the direction of M.D.C. Chief Engineer Rablin, this bridge is a three arch reinforced concrete structure. The original 1811 pile trestle bridge on this site, rebuilt in 1884 and 1920, had a leaf draw. The present structure, approximately 330 feet long, supports a 40 foot roadway with two 8' 6" sidewalks, and has a 20 degree skew with the axis of its center line. Cutwaters, neoclassically ornamented and placed between the arches at the piers, are pointed on the upstream (western) elevation and rounded on the downstream (eastern) elevation. A round nosing at the parapet is carried the length of the bridge, which retains its original lamp posts. Stylistically, the bridge is reminiscent of the Pont Neuf in Paris.

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E. Western Avenue Bridge

A three-arched, cast-in-place reinforced concrete structure, the Western Avenue Bridge was built in 1924. The original 1824 pile trestle bridge on this site, rebuilt in 1879-80 and 1910, had a leaf draw. The present structure is 328 feet long, carrying a 40 foot roadway and two 10 foot sidewalks. The horizontally beveled concrete joints, with bush hammered concrete belt course, ring stone, and parapet cap, contribute to the modest neoclassical style of the structure.

F. John Wingate Weeks Bridge

Completed in 1927 according to the architectural designs of the firm of McKim, Mead and White, and the engineering specifications of M.D.C. Chief Engineer Rablin, this reinforced concrete three-arched foot bridge is faced with brick and limestone. The Georgian Revival style of the structure intentionally complements the Howard Houses and Business School along the riverfront. The nosing, parapet and seals are of limestone, the pylons of granite, and the brackets and lamps of bronze. It was designed to carry steam pipes as well as to provide access to the McKim, Mead and White-designed Business School.

G. Larz Anderson Bridge

Completed in 1915 under the direction of John R. Rablin, Chief Engineer, according to the design of Wheelright, Haven and Hoyt, architects, this bridge is a three-arch reinforced concrete structure with spandrel walls and panels of roughly picked concrete clad with belt courses of red brick. The neoclassical ornament of the bridge is intended to conform with the brick Georgian Revival Architecture of the Harvard riverfront buildings. The gift of Larz Anderson as a memorial to his father, Nicolas Longworth Anderson, a Major General in the Civil War, the structure stands on the site of the Great Bridge of 1662, the first bridge across the Charles.

H. Eliot Bridge

Completed in 1950, the Eliot Bridge is a three span-granite and reinforced concrete structure, faced in brick and masonry. The bridge has a conventional reinforced concrete slab roadbed that is braced by steel beams. Maurice E. Witner was the architect, and Burns and Kennerson were the construction engineers. The Eliot Bridge was named for Charles W. Eliot, President of Harvard from 1869 to 1909,

and for his son Charles Eliot, landscape architect and partner in the firm of Olmsted, Olmsted and Eliot, who proposed a bridge at this site in his plans for the Basin in 1892-1897.

III. Canals

A. Lechmere Canal, Cambridge

In the northwestern corner of the Charles River Basin district is the Lechmere Canal. The Canal is basically rectangular in plan, but has an L-shaped terminus. In 1909, the Canal was three-tenths of a mile long. Today the Canal measures 90 feet in width, 700 feet in length, and has a turning basin 225 feet wide at its terminus. A steel grate highway bridge crosses the Canal at Commercial Avenue.

B. The Broad Canal, Cambridge

The Broad Canal, as it exists today, was dug in 1805 as part of a complex of canals and wharves developed to make Cambridgeport an ocean port. Most of the system was soon abandoned and filled in, but the Broad Canal is still in use. It was most recently filled in 1965, when it was reduced from 3,700 feet to its present 1,000 feet length and 100 feet in width. Two reinforced concrete and steel counterweighted lift bridges carry First Street and the Cambridge Parkway across the Canal.

IV. Description of Parkways

A. Memorial Drive and Cambridge Parkway, Cambridge

Memorial Drive and the Cambridge Parkway today follow the original conception of Charles Eliot and others for a continuous parkway along the Cambridge side of the Charles River Basin. Although the entire river bank was purchased for park land by 1900 and many sections of the parkway were completed at various dates early in the twentieth century, continuous passage by automobile has been possible only since 1949, when Memorial Drive was extended beyond Bath Street to an extension of Fresh Pond Parkway near the Eliot Bridge. The Drive originally had been laid out beginning in 1896 from Bath Street, near Harvard Square, to the Longfellow Bridge, while the Cambridge Parkway had been completed from the Longfellow Bridge to the Charles River Dam in the 1930's.

From the Dam to a point half way between the Harvard and Boston University Bridges and between the River Street and Western Avenue Bridges, the river bank is faced with a granite seawall; in other areas, the bank gradually slopes to the water. Landscaping along the Cambridge Parkway, which has four lanes of pavement, is comparatively meager, consisting of an iron railing, a concrete sidewalk, and a grassy strip planted with widely spaced immature trees. The inland side of the parkway is bounded only by a sidewalk and a narrow planting strip. Memorial Drive, however, presents its most formal aspect from the Longfellow Bridge to the end of the seawall. In this area, the dual carriageways are separated by a broad planting strip with many mature trees, which also line the sidewalks along both the river and inland sides of the Drive. A continuous iron fence runs along the seawall, and covered benches are placed at intervals. From the end of the seawall to the Eliot Bridge, Memorial Drive has four undivided lanes, and is bordered by sidewalks and a landscaped verge planted in mature shade trees. The famous sycamores, actually London Plane trees, are planted from Western Avenue to the Eliot Bridge.

1. The M.I.T. Memorial Underpass, Cambridge

The construction of this underpass in Memorial Drive under Massachusetts Avenue at the northern end of the Harvard Bridge was completed in 1931. Each roadway is 21 feet wide, and paved with granite blocks grouted with cement, following a procedure adopted for the Holland Vehicular Tunnel in New York City. The portion of the underpass above ground has neoclassical ornament similar in massing and detail to the boat landings, of the same period, on the Storrow Embankment.

2. The William J. Feid Overpass, Cambridge

Completed in January, 1939, this overpass at the Boston University Bridge was designed by William M. Drummey, architect. The construction engineers were Moore and Haller. The steel-framed overpass is faced with brick, ornamented with granite, and supports a reinforced concrete deck. Unusual in style for highway architecture, the detailing of the overpass is art moderne in concept, but it is paradoxically laid up in brick, ornamented with simple W.P.A.-era detailing. The original sodium vapor lamps, now rare examples of an early era of parkway light fixtures, still stand on the structure.

B. Embankment Road, Storrow Drive, and Soldiers' Field Road, Boston

Although the Gourley Plan of 1851 envisioned a parkway along the Boston side, the first serious proposal was the recommendation of the Report on a Thoroughfare Plan for Boston of 1893 for construction of a road connecting Embankment Road at Arlington and Beacon Streets with Bay State Road near Kenmore Square. Organized protests kept this proposal from implementation in 1929, but Chapter 262 of the Acts of 1949 authorized construction of the James J. Storrow Memorial Drive and Embankment. This limited access highway consists of two lanes in each direction separated by a narrow barrier, under- and over-passes at Charles Circle, Arlington Street, Massachusetts Avenue, and Charlesgate, and six footbridges providing access to the Embankment. The three roads today form a continuous parkway on the Boston side from the Charles River Dam past the Eliot Bridge to Watertown.

Much of the Storrow Memorial Embankment is located in the Back Bay National Register District, but details of its construction are not discussed in that nomination. With a gift of Mrs. Helen Osborne Storrow of one million dollars for the beautification of the Boston Embankment, the Metropolitan District Commission in 1931-34 doubled the area of the original Esplanade. Charlesbank Park was widened to a maximum of three hundred feet, and a boat haven and breakwater, consisting of two narrow, curved islands, was built. The Embankment between Otter Street and Charlesgate West was extended into the River one hundred and fifteen feet, and from Charlesgate West to the Cottage Farm Bridge one hundred and fifty-five feet. Between Exeter and Fairfield Streets a lagoon one thousand feet long was constructed, and a breakwater was built opposite Pinckney Street. Four miles of footpath were laid, monumental boat landings, neoclassical in detail, were built, and stone-arched bridges were erected over the ends of the lagoon. Arthur A. Shurcliff, the landscape architect in charge, also oversaw the five acre widening of the Charlesbank in 1951 that resulted from the construction of the James J. Storrow Memorial Parkway.

West of the Boston University Bridge the parkway is know as Soldiers' Field Road. This incorporates the Speedway, which had been built about 1895 for carriages and sleighs which had previously raced on the Milldam, or Beacon Street. By 1955, a continuous parkway extended along the south bank from Watertown Square to the Charles River Dam.

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V. Structures on the Basin

A. Metropolitan District Commission

1. Police Headquarters and Lock Houses, Boston

One of several service buildings built on the Dam in 1910 by the Metropolitan District Commission, the Police Headquarters is located in Boston between the lock and Embankment Road. It is a two-story structure dominated by an asymetrically placed square tower which houses the lock operator. The walls are laid up in yellow Roman brick with a granite belt course at the level of the first floor window sills, while the complex green shingled hipped roofs with broad overhanging eaves emphasize the informal nature of the composition. The lock houses are simplified expressions of the same style. Guy Lowell of Boston was Consulting Architect for all structures on the Dam.

2. Boat House, Cambridge

The M.D.C. Boat House, also constructed in 1910, repeats the style of the Police Headquarters. It is a one-story building square in plan, with a green tile hip roof and water-level doors to accommodate boats. The boat house is located opposite the entrance to the Lechmere Canal.

3. Garages, Cambridge

The M.D.C. garages at the corner of Commercial Avenue and Bridge Street share the style and building materials of the Police Headquarters and Boat House. The three connected garages, originally built as stables, are grouped around a courtyard entered from Commercial Avenue and screened by low brick walls.

4. Magazine Beach Bath House, Cambridge

This one-story, hipped-roofed structure, laid up in roughly hewn granite blocks, was originally constructed on Captain's Island in Cambridge in 1818 by the Commonwealth of Massachusetts for use as a powder magazine. In 1899, the firm of Olmsted, Olmsted and Eliot had the magazine demolished and replaced it with a bathhouse built of the same blocks. The bathhouse retains the mass and outline of the original structure.

5. Sailing Pavillion, Boston

The M.D.C. Sailing Pavillion is a one-story structure of buff brick with decorative plaques forming a frieze designed in 1940 by an unknown architect. It is located on Embankment Road at the Longfellow Bridge.

6. Hatch Memorial Shell, Boston

This structure, constructed in 1940 on the Esplanade at the end of Arlington Street, is a granite-faced concrete music shell used for seasonal concerts by the Boston Pops and other orchestras. The architect was Richard Shaw of Boston.

7. Miscellaneous Structures

Miscellaneous structures of the M.D.C. include maintenance structures in Cambridge and Boston; several bridges in the Lagoon area of the Esplanade; statues, plaques and monuments in the Esplanade; and a clorination plant and public swimming pool and bathouse at Magazine Beach, Cambridge.

B. Museum of Science and Hayden Planetarium, Boston and Cambridge

The Museum of Science has been constructed in several stages since 1951 on the formerly open esplanade atop the Dam. The bold modern architecture of these buildings is achieved with a limited use of ornament and emphasis on strongly rectilinear proportions, broken only by the white dome of the Hayden Planetarium. The architects of the East Wing (1951) were Ames, Child and Graves, the firm also responsible for the Planetarium (1958). The Central wing was designed in 1961 by Perry Shaw Hepburn & Dean, the Garage in 1968 by E. Vernor Johnson, Robert N. Hotvedt & Assoc., and the West Wing in 1972 by the same firm.

C. Boathouses

1. Newell Boat House (Harvard University), Boston

Designed by Peabody & Stearns in 1900, this two-story red brick, slate-roofed structure is one of two Harvard University boathouses on the Charles. Symmetrical in plan, the building has two-story square-hipped roof towers at each corner. The facade of the structure is dominated by a steeply roofed porch, supported by pairs of wooden columns. A prominent center cross gable projects from the roof of the porch, marking the entrance. Three dormers, which also have steep gable roofs, project from the second story, and further contribute to the French Chateauesque characteristics of the building.

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2. Weld Boat House (Harvard University), Cambridge

Completed in 1906, the Weld Boat House is a two-story French Renaissance revival building, architect unknown. Rectangular in plan, the stuccoed structure is trimmed with brick quoins and molded brick window surrounds. An elaborate, carved limestone frontispiece dominates the entrance. The door surround carries a correct entablature, with engaged Corinthian columns. The upper portion of the frontispiece has a segmental arch pediment which is set amidst rococco decoration.

3. The Harold Whitworth Pierce Boat House (Massachusetts Institute of Technology), Cambridge

This one-story, timber-framed, flat-roofed structure was designed as a Massachusetts Institutue of Technology boathouse in 1965-66 by the firm of Anderson, Beckwith & Haible. Simple wooden panels dominate the facade, giving the building its unadorned modern style. The structure appears to float on the water but is supported on piles.

4. Walter C. Wood Sailing Pavillion (M.I.T.), Cambridge

Originally constructed as the first Massachusetts Institute of Technology boat house in 1936 by the firm of Coolidge and Carlson, this building was reconstructed in 1976.

5. Boston University Boat House, Cambridge

The Boston University Boat House is a two story shingled structure with a hip roof built in 1913 for the Boston Athletic Association.

6. Riverside Boat Club, Cambridge

Constructed between 1904 and 1916, this frame Colonial Revival structure is presently used by Northeastern University.

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VI. Street Railway Viaduct

The viaduct carrying the street car tracks of the Massachusetts Bay Transportation Authority from Boston to Cambridge was erected in 1910-1911 by the Boston Elevated Railway. Designed by the Boston architect Robert S. Peabody, of the firm Peabody & Stearns, the viaduct was intended to provide a suitable visual termination to the eastern end of the Basin and to mask the unsightly railroad yards and wharves downstream. This function is now carried out by the buildings of the Museum of Science, but the viaduct still provides a strong visual experience to motorists on the Dam.

The viaduct is constructed of poured concrete with a steel frame. The ten arches rest on granite piers in the bed of the Charles adjacent to the downstream face of the dam. The span opposite the lock incorporates a single-leaf steel draw, controls for which are located in a concrete tower atop the viaduct. The piers at each end of the viaduct rise above the parapets and incorporate the date of construction, 1910, in relief.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	X__COMMUNITY PLANNING	X__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	X__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	X__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	X__EDUCATION	X__MILITARY	X__SOCIAL/HUMANITARIAN
__1700-1799	__ART	X__ENGINEERING	__MUSIC	__THEATER
X__1800-1899	X__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	X__TRANSPORTATION
X__1900-	X__COMMUNICATIONS	__INDUSTRY	X__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES 1893-1910 BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

SUMMARY

The Charles River Basin is the most important element of Boston's metropolitan park system, the first such system realized in the United States. The embankment and park land adjoining the water provides Boston and Cambridge with an amenity that makes them two of the country's most attractive cities. Originally an estuary edged with tidal mud flats, the Charles River was transformed into a recreational reserve by the construction of the Charles River Dam in 1910, finally fulfilling a series of plans developed for the Basin through the Victorian era. The person chiefly responsible for establishing the Basin as a focal point of the park system, Charles Eliot, of the firm of Olmsted, Olmsted and Eliot, is a major figure in the early history of the profession of landscape architecture, which developed principally in the Boston area.

1. History

The history of both the Cambridge and Boston shorelines from 1793 until the construction of the Charles River Dam in 1910 is primarily that of continuous efforts to reclaim the mud flats and marshes for dry land. On the Cambridge side, every bridge was connected to solid land by long causeways over the marshes, while on the opposite Boston shore high ground came close to the water's edge except in the Back Bay. The earliest filling operations along the Charles took place in Cambridgeport after the construction of the West Boston Bridge; filling continued there and in East Cambridge as demand grew for industrial land and wharves. Filling of Boston's Back Bay began in 1857, and continued until the 1880's.

The Charles River has been a focus for the development of Cambridge since 1630, when John Winthrop founded Newtowne on its northern bank, near the present Larz Anderson Bridge. Boston, on the other hand, faced the ocean; Back Bay, on the Charles, was aptly named. In 1635, the Cambridge settlers established a ferry that connected Newtowne with a road on the southern side of the River. This served until 1662, when "the Great Bridge" was completed on the site of the Anderson Bridge. However, Cambridge remained relatively isolated from Boston until 1793, when the construction of the West Boston Bridge, on the site of the present Longfellow Bridge, reduced the travel distance between the centers of the two towns from eight to three and one-half miles.

The completion of the West Boston Bridge was followed, in 1809, by the construction of the Canal (or Craigie) Bridge, from Lechmere Point in East Cambridge to Barton's Point in Boston. (This structure was removed in 1910 when the Charles River Dam was built.) During the first decade of the nineteenth century, the waterfront adjacent to these two bridges was the object of considerable speculation by Cambridge developers who believed the economic future of the city rested in its potential as a shipping center. Cambridgeport, at the Cambridge end of the West Boston Bridge, was named with the expectation that the waterfront could be developed into a ocean port, and an intricate system of canals was constructed. In 1806, Congress designated Cambridge as an official United States port of delivery, but the Embargo of 1807-09 ended these mercantile plans. The Broad Canal, still a feature on the Cambridge waterfront, is the sole reminder of that era of waterfront development.

Although the Embargo ended the flow of capital into port facilities, real estate speculation continued. Cambridge subsequently began to develop into three separate regions: Old Cambridge, the original settlement, Cambridgeport, near the West Boston Bridge, and East Cambridge. In all three sections transportation was a major activity, as competing turnpikes were laid out to connect Boston with the north and west. Both the River Street and Western Avenue Bridges (1810 and 1824, respectively) were constructed to carry turnpikes connecting Watertown, Brighton, and Newton with Boston via the West Boston Bridge. The importance of these routes was reinforced with the construction of the first street railway in New England across the West Boston Bridge in 1856. Other lines followed, stimulating intense suburban development that lasted until World War I.

In 1853, the Grand Junction Railroad, later a branch of the Boston and Albany Railroad, built a lengthy causeway across the tidal flats between Cambridgeport and the West Boston Bridge. The reclaimed lands along the railway became the center for manufacturing in Cambridge during the second half of the nineteenth century. The railroad crossed the Charles at the Brookline Street Bridge (originally known as the Cottage Farm Bridge), completed in 1851 on the site of the present Boston University Bridge.

While the Back Bay was reclaimed by the Commonwealth of Massachusetts, riverfront development in Cambridge was carried out by enterprising merchants and speculators. In 1881, the Charles River Embankment Company proposed the construction of a sea wall extending from the Brookline (Boston University) Bridge

to the West Boston (Longfellow) Bridge and the reclamation of land behind the wall for the construction of an elegant residential area, planned around an ornamental, spacious esplanade. Although plans for this residential area, similar in conception to the Back Bay, never came to fruition (the Massachusetts Institute of Technology stands on its proposed site), the visions of Charles Davenport, founder of the Cambridge Embankment Company, had a far-reaching effect on the ultimate appearance of the waterfront.

Davenport aroused public interest in the embankment project and pointed out the need for a new bridge, connecting his proposed esplanade with West Chester Park, in the Back Bay directly across the Charles. This led the Massachusetts Legislature to authorize, in 1882, the construction of the Harvard Bridge, which opened in 1891. The City of Cambridge supported the Embankment Company by relieving increased taxes in exchange for the construction of a wide approach to the Harvard Bridge. In 1883, the Embankment Company built 1,000 feet of retaining wall along the River, where M.I.T. now stands. In 1889, Davenport commissioned Frederick Viaux, who drew a design, complete with strict specifications for set backs and materials, for the never-realized residential district. Although the Embankment Company was dissolved in the depression of 1893, Davenport's proposal for an esplanade along the Charles was completed by the Cambridge Park Commission in 1896-1905.

The idea of damming the Charles, providing a landscaped embankment, and establishing a method of flood control, was not new when Frederick Law Olmsted, the nation's first landscape architect, was consulted by the Boston Park Commission in 1882. In 1844, Robert Gourlay, a Scot concerned with what he called "the science of city building", publicized his plan for Boston, proposing the construction of an embankment in a scheme that reclaimed 2,000 acres of land with the filling of Back Bay. Gourlay predicted streetcar suburbs in his design by proposing an extensive railroad system on both sides of the Charles. Following the River along the railroad, a great boulevard 260 feet wide included carriageways, planting strips and footpaths. Although Gourlay's conception apparently was forgotten during the second half of the nineteenth century, it was a forerunner of the later concept of the Basin.

The Back Bay area of Boston was originally a tidal backwash separating the Boston peninsula, along its western border, from the Town of Brookline. Through the first half of the nineteenth century, the Back Bay was dammed and the power used intermittently for milling operations. In 1857, the process of filling in the

tidal flats began at Arlington Street; by the late 1880's, the marsh that once separated Boston and Brookline had been reclaimed, creating over four hundred fifty acres of dry land behind a seawall paralleling Beacon Street. By 1895, the margin of the Basin on the Boston side had been filled and developed as a park, the precursor of the present Storrow Memorial Embankment. Much of this area is within the Back Bay and South End National Register Districts.

Boston's early concern for parks was evident in the construction of the Public Gardens, adjacent to the Common, in 1856. In the same year, Arthur Gilman laid out the orthogonal plan for Back Bay, extending Commonwealth Avenue--connecting the Public Gardens with what later became the Fenway--to the western edge of the new area.

Following the Civil War, a renewed interest in parks led to the formation of the Boston Park Commission in 1875. The Commission's first report, published in 1876, put forward a series of farsighted proposals, including a proposal for the creation of a park on the Boston side from the Craigie Bridge (now the site of the Charles River Dam) to the Cottage Farm Bridge (now the Boston University Bridge) laid out with walks, drives, saddle paths and boat landings, ornamented by shrubbery and turf. This location, which ultimately became the right-of-way of Storrow Drive, was selected to meet the Park Commissioner's guidelines: accessibility to all classes of citizens, economical to purchase, adaptable to Park purposes, and carrying sanitary advantages for the City of Boston. In 1877, the Park Commission appropriated $500,000 for 100 acres of land in Back Bay Park.

The Park Commission requested Olmsted, who had been designing Central and Prospect Parks in New York City, to review the competition drawings submitted for the development of Back Bay Park. In 1881, the Park Commission began construction. Olmsted, reflecting the popular taste in his original report on these Boston projects, envisioned a "Charles River Embankment--broad bay and River views with a rus-urban background seen from a stately promenade."[2] He understood the role of the Basin as the principal feature in his "Emerald Necklace" scheme for parks connected by parkways throughout the Boston area. Between 1885 and 1896, the number of parks and parkways was increased from six to nineteen, at a cost of $13,000,000 dollars, resulting in 2,162 acres of public park land. Olmsted's firm, with intermittent attention from the landscape architect himself, continued to act as consultants to the Boston Park Commission during these years.

The key figure responsible for marshalling the interest and energy that ultimately resulted in the Dam was Charles Eliot. A landscape architect and partner in the firm of Olmsted, Olmsted and Eliot from 1893 to 1897, Eliot lobbied for the creation of a regional park commission as early as 1890. His efforts led to the creation of the Metropolitan Park Commission in 1893; it was, in his words, "a separate and impartial body capable of disregarding municipal boundaries and all local considerations, empowered to create a system of public reservations for the benefit of the metropolitan district as a whole."[5] In the years of his partnership in the Olmsted firm, Eliot had primary responsibility for their Boston Commissions; he wrote their consultants' reports for the Metropolitan Park Commission, the Cambridge Park Commission, the Massachusetts Department of Public Health, always advocating the completion of the Basin. Olmsted retired in 1895, but Eliot, until his sudden death in 1897, continued as the authority on the Basin design and implementation. The 1903 study that finally brought the construction of the Dam substantially reflects Eliot's thinking. In 1920, the Metropolitan Park Commission was merged with other municipal organizations to become the Metropolitan District Commission, which administers the Basin for public benefit today.

During the first two decades of the twentieth century, the bridges over the Charles underwent a period of improvement, typical of the concern with public works engineering in the economic boom of that period. In 1906, the Cambridge (Longfellow) Bridge was built, on the site of the 1793 structure. The Charles River Dam replaced the Craigie (or Canal) Bridge in 1910, and, in the Harvard region of the Basin, the Larz Anderson Bridge was built, on the site of the 1662 Great Bridge, in 1915. Reinforced concrete was used in what was regarded as progressive bridge design in both the Western (1924) and the River Street (1926) Bridges, built on the original 1824 and 1810 sites, respectively. In 1927, Harvard hired the firm of McKim, Mead and White for the John Weeks footbridge, leading from the main campus to the Business School. The Boston University Bridge was built in 1928 near the site of the original 1852 Cottage Farm Bridge, where the Grand Junction branch of the Boston and Albany railroad crossed the Charles. The only post World War II bridge over the Basin is the Eliot Bridge, completed in 1950.

The twentieth century has brought to the daily experience of the Charles River Basin something Eliot, Olmsted and their colleagues never completely imagined -- the automobile. When the 1894 Massachusetts Legislature passed the "Boulevard Act," the Metropolitan Park Commission was charged with responsibility for over-

seeing the construction of parkways for pleasure driving of carriages to and between the parks along Olmsted's "Emerald Necklace." To make them accessible to the public, Eliot "planned for electric cars on these parkways, that by them the populace might reach the forest reservations cheaply but in a pleasureable manner."[4] Transit lines were never built, however, and from about 1920 to the late 1960's, the parking system was continually upgraded to accommodate rapidly increasing numbers of automobiles.

Memorial Drive was regarded widely as a model modern parkway and influenced the designs of the 1912 downtown St. Louis parkway and the 1923 Bronx River Parkway. In 1931 the underpass was built in front of M.I.T., using granite block pavements grouted with cement in a progressive highway safety design. In 1939, the brick-faced Memorial Drive overpass, a rare example of highway architecture of that period, was built on the Cambridge side of the Boston University Bridge. Memorial Drive in the District remains essentially as it was in the years between the World Wars.

The Charles River Basin provides the contemporary metropolitan district populace with the relief of urban open space that its original advocates predicted. Between 1931 and 1933, in response to Storrow Drive plans, the Esplanade on the Boston side was nearly doubled in size, creating two islands and the lagoon. Several footbridges and the Hatch Shell were built during these years, and their present use attests to the enduring popularity of the Basin as a recreation area. Although those who conceived the Basin might not recognize the area today, their conception continues to answer the needs of the metropolitan area's population.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

FOOTNOTES TO SIGNIFICANCE ESSAY

[1]The history of the Back Bay is more fully treated in the nomination for that District.

[2]S. B. Sutton, editor, Civilizing American Cities: A Selection of F. L. Olmsted's Writing on City Landscapes (Cambridge, MA, 1971), p. 224.

[3]Charles William Eliot, Charles Eliot, Landscape Architect (Boston, 1902), p. 357.

[4]Ibid., p. 457.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

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Cambridge Park Commission, Annual Reports, 1893-195.
Eliot; Charles William, Charles Eliot: Landscape Architect, Boston, 1902.
Eliot II; Charles W., "The Boston Park System," Fifty Years of Boston, A Memorial Volume, Boston, 1932.
Eliot II; Charles W., "The Charles River Basin," Proceedings of the Cambridge Historical Society, Vol.39, 1961-63.

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 820

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	19	324510	4693560
B	19	325660	4692760
C	19	326200	4691000
D	19	328470	4691790

VERBAL BOUNDARY DESCRIPTION

Commencing at the intersection of the downstream face of the Charles River Dam and the Boston shoreline; then running southwesterly on the property line of the Metropolitan District Commission (MDC) to the Longfellow Bridge approach rotary; then running westerly along the property line of the MDC to the point nearest the upstream abutment of the Eliot Bridge; then crossing the Charles River along the upstream face of the Eliot Bridge, and continuing westerly to the western edge of the Memorial Drive Extension right of way in Cambridge; then running northeasterly along the western edge of the Memorial Drive

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
Massachusetts	025	Suffolk	025
STATE	CODE	COUNTY	CODE
		Middlesex	017

11 FORM PREPARED BY

NAME / TITLE

Candace Jenkins, National Register Editor & Carol Ann Clark, Intern Charles Sullivan, Director, Cambridge Historical Commission

ORGANIZATION — DATE

Massachusetts Historical Commission — September 1, 1978

STREET & NUMBER — TELEPHONE

294 Washington Street — 617-727-8470

CITY OR TOWN — STATE

Boston — Massachusetts 02108

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ___ STATE X LOCAL ___

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE Frederick P. Weslowski 9/14/78

TITLE Executive Director, Mass. Historical Commission DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

GPO 892-453

Form No 10-300a
(Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

CONTINUATION SHEET 1 ITEM NUMBER 9,10 PAGE 1

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Nolen; J. & Hubbard; H.V., Parkways and Land Values, Cambridge, 1937.
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UTM References

E	19/329080/4692780	J	19/325440/4690840
F	19/329740/4692340	K	19/325500/4692380
G	19/329270/4691060	L	19/324110/4693000
H	19/327460/4690560		

Verbal Boundary Description, Continued:

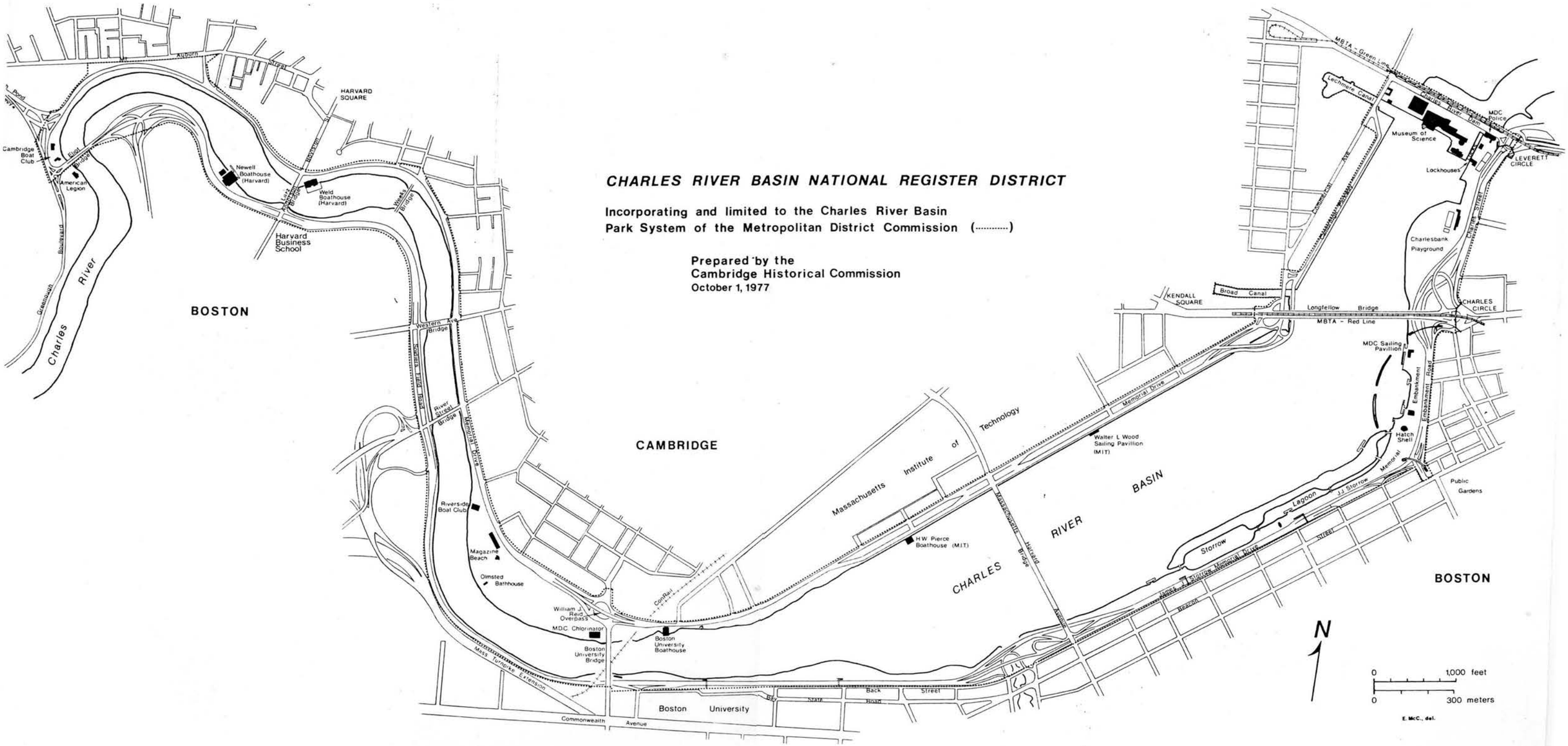
Extension right of way to the Southwest corner of the laboratory building property of Mount Auburn Hospital; then running easterly along the MDC property line to the intersection of Memorial Drive and the southern edge of the Broad Canal; then running along the perimeter of the Broad Canal and returning to the MDC property line and running easterly along the Cambridge Parkway; then running northerly along the MDC property line to the Commercial Ave crossing of the Lechemere Canal; then running along the perimeter of the Lechemere Canal; then running northerly along the eastern edge of the Commercial Avenue right of way to the northwest corner of the intersection of Monsignor O'Brien Highway and Charlestown Avenue; then running southeasterly along the eastern edge of the O'Brien Highway right of way to the downstream face of the Charles River Dam and returning to the starting point.

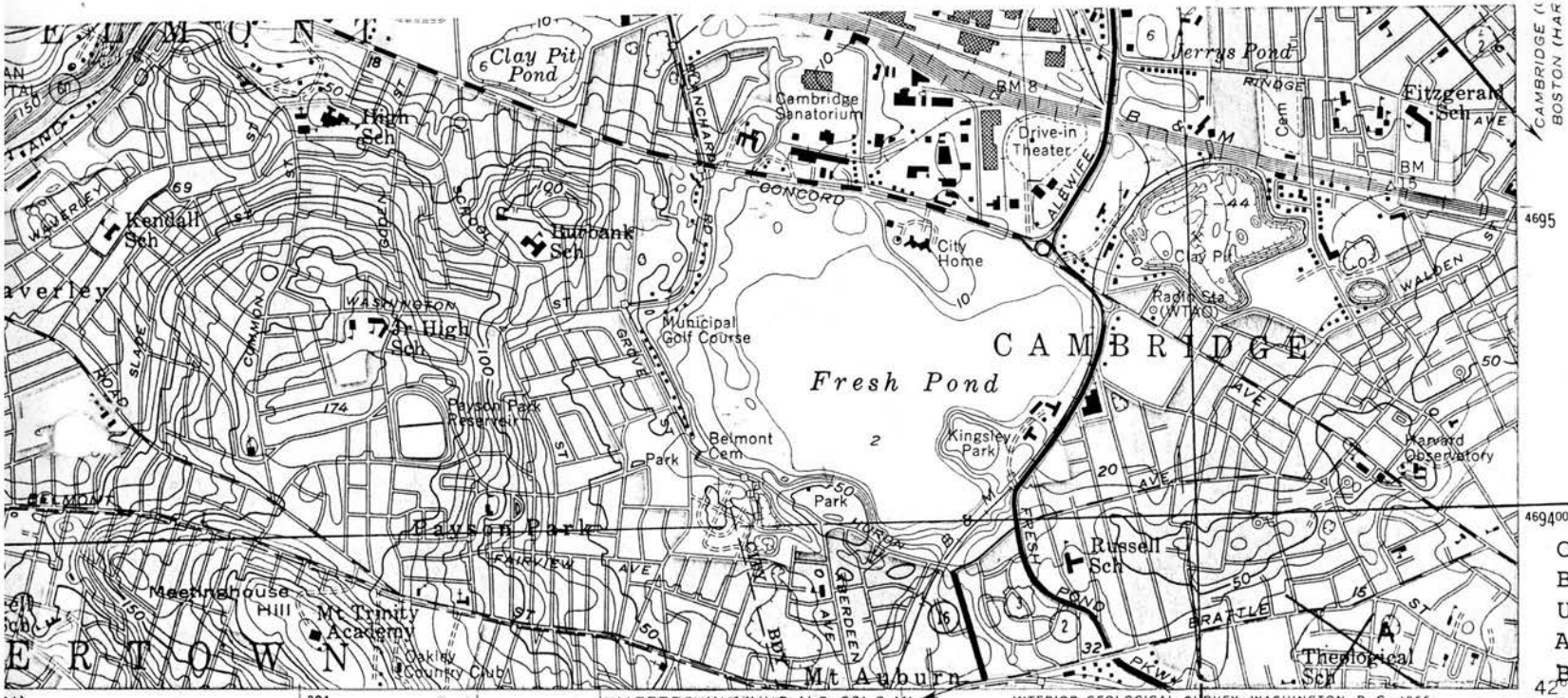
CHARLES RIVER BASIN NATIONAL REGISTER DISTRICT

Incorporating and limited to the Charles River Basin Park System of the Metropolitan District Commission (.....)

Prepared by the Cambridge Historical Commission

October 1, 1977





Charles River Basin H.D.
Boston/Cambridge, MA.
UTM References, MAP 1
A 19/324510/4693560
B through K see Map 2
L see Map 3

1 MILE

4000 5000 6000 7000 FEET

1 KILOMETER

AL 10 FEET
EA LEVEL

MAP ACCURACY STANDARDS
VEY, WASHINGTON, D. C. 20242
D SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
U. S. Route
State Route

LEXINGTON, MASS.
N4222.5—W7107.5/7.5

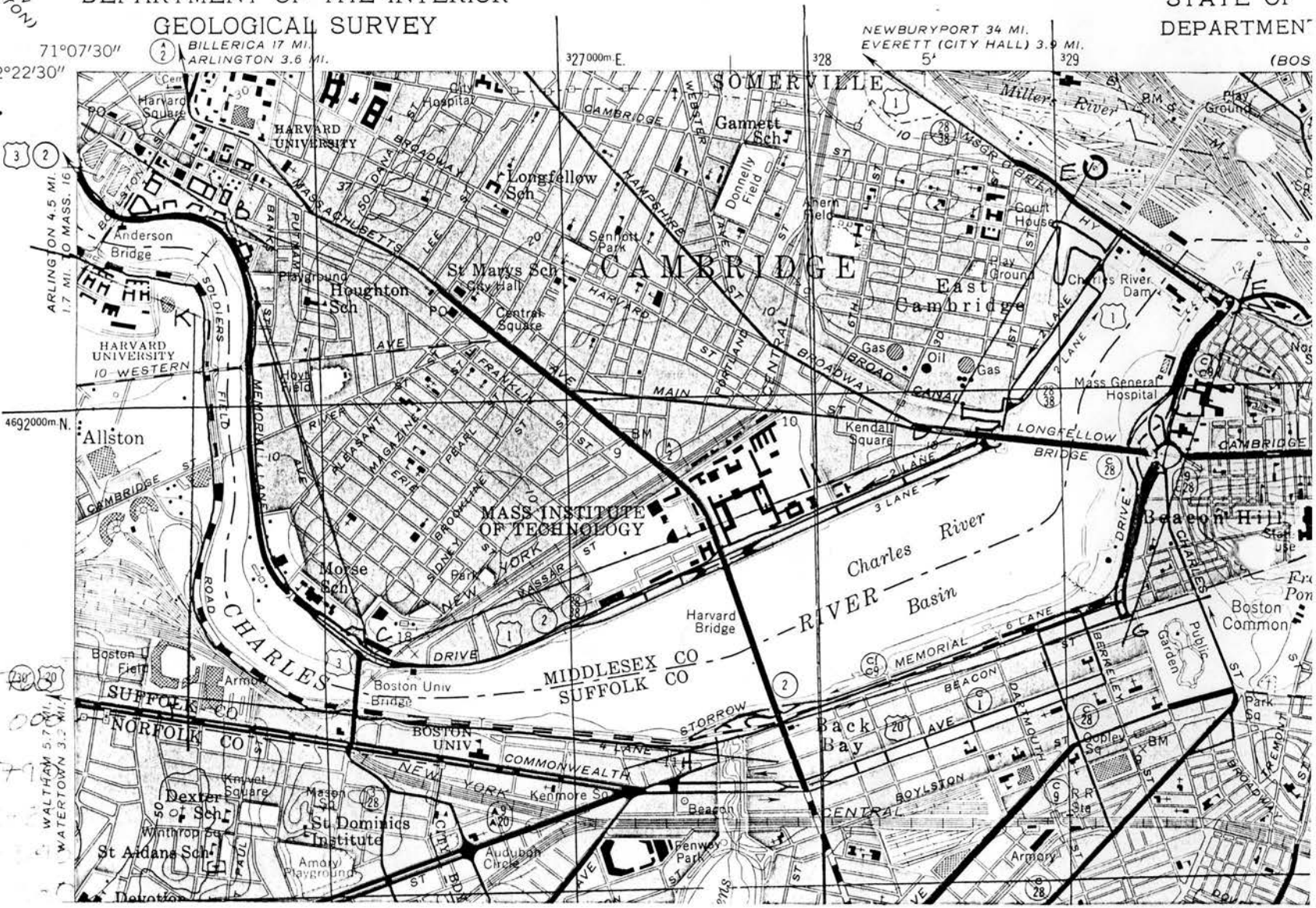
1956

AMS 6768 I NW—SERIES V814

68

Charles River Basin H.D.
Boston/Cambridge, MA.
UTM References, Map 2

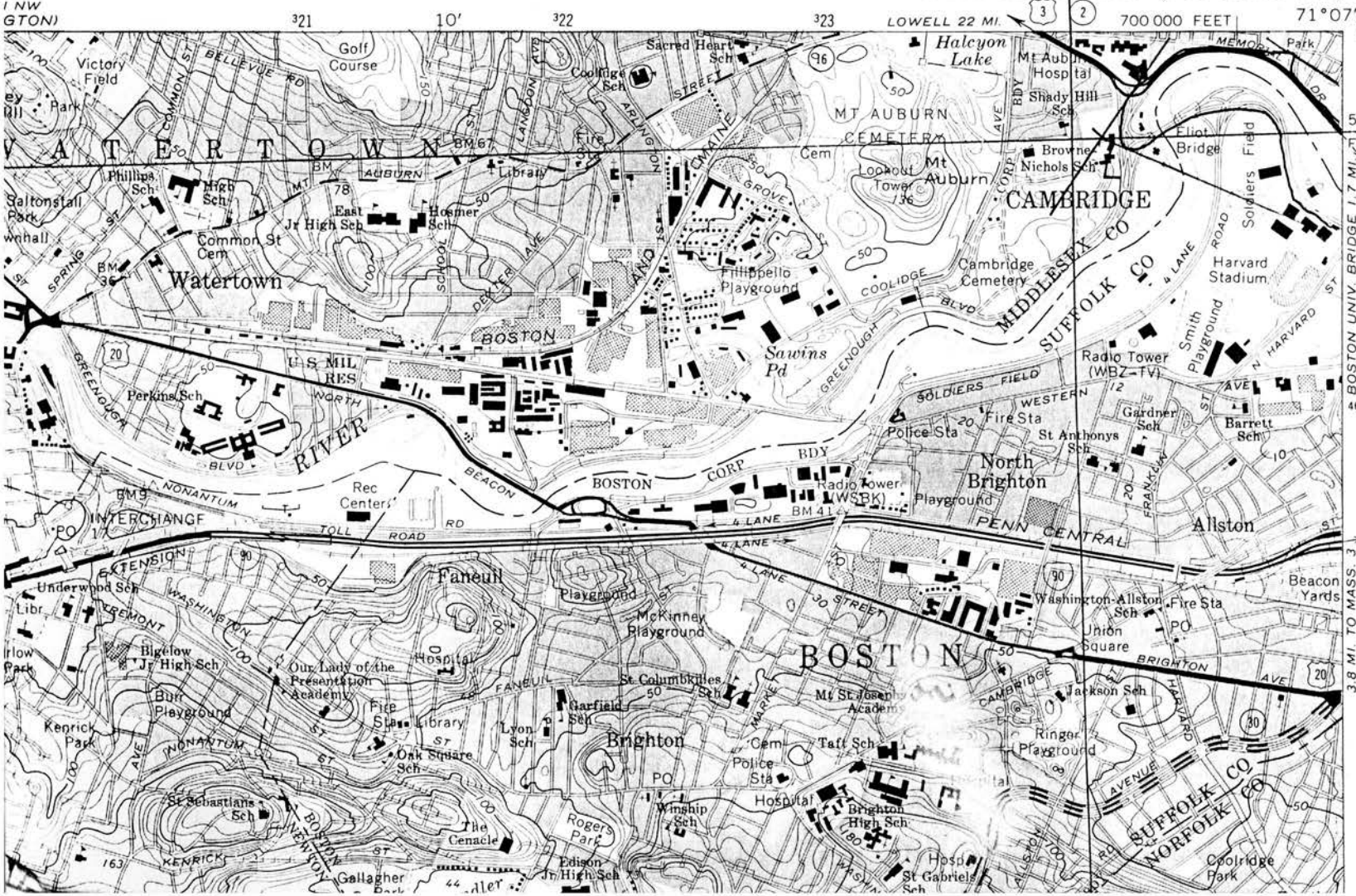
A	See Map 1
B	19/325660/4692760
C	19/326200/4691000
D	19/328470/4691790
E	19/329080/4692780
F	19/329740/4692340
G	19/329270/4691060
H	19/327460/4690560
J	19/325440/4690840
K	19/325500/4692380
L	See Map 3



F MASSACHUSETTS
PUBLIC WORKS

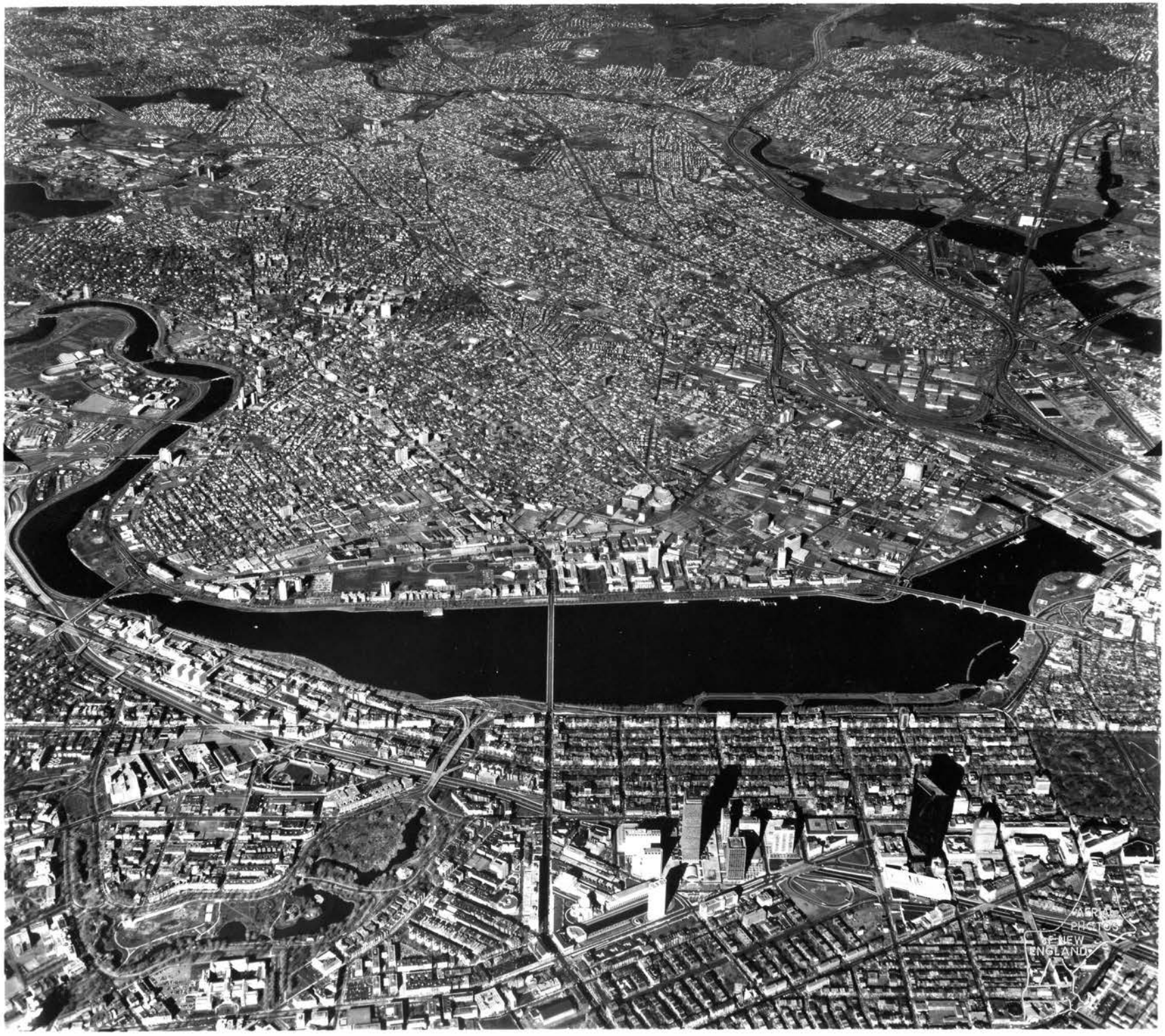
NEWTON QUADRANGLE
MASSACHUSETTS
7.5 MINUTE SERIES (TOPOGRAPHIC)

6768 I NE
(BOSTON NORTH)



Charles River Basin H.D.
Boston/Cambridge, MA.
UTM References, Map 3

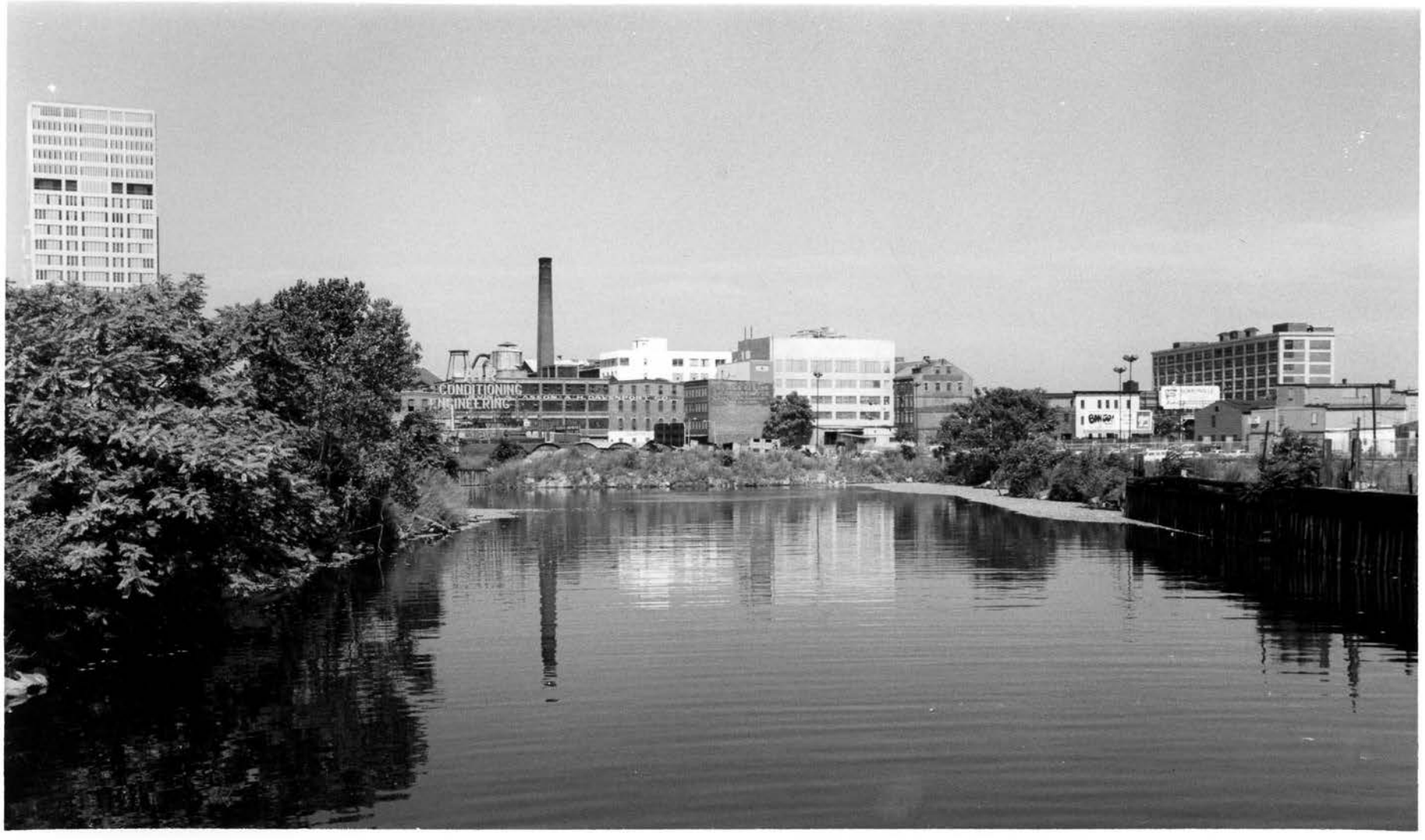
500 000
FEET A See Map 1
B through K, see Map 2
L 19/324110/4693000



1. [Aerial photograph] Looking north at the river basin. (Photograph: Aerial Photos of New England, Inc., November 1977)

2. Museum of Science and MBTA Viaduct at Charles River Dam, Cambridge & Boston. (Photograph: Charles Sullivan, December 1977)

3. Memorial Drive and embankment, with Weeks Bridge in background. (Photograph: Charles Sullivan, December 1977)

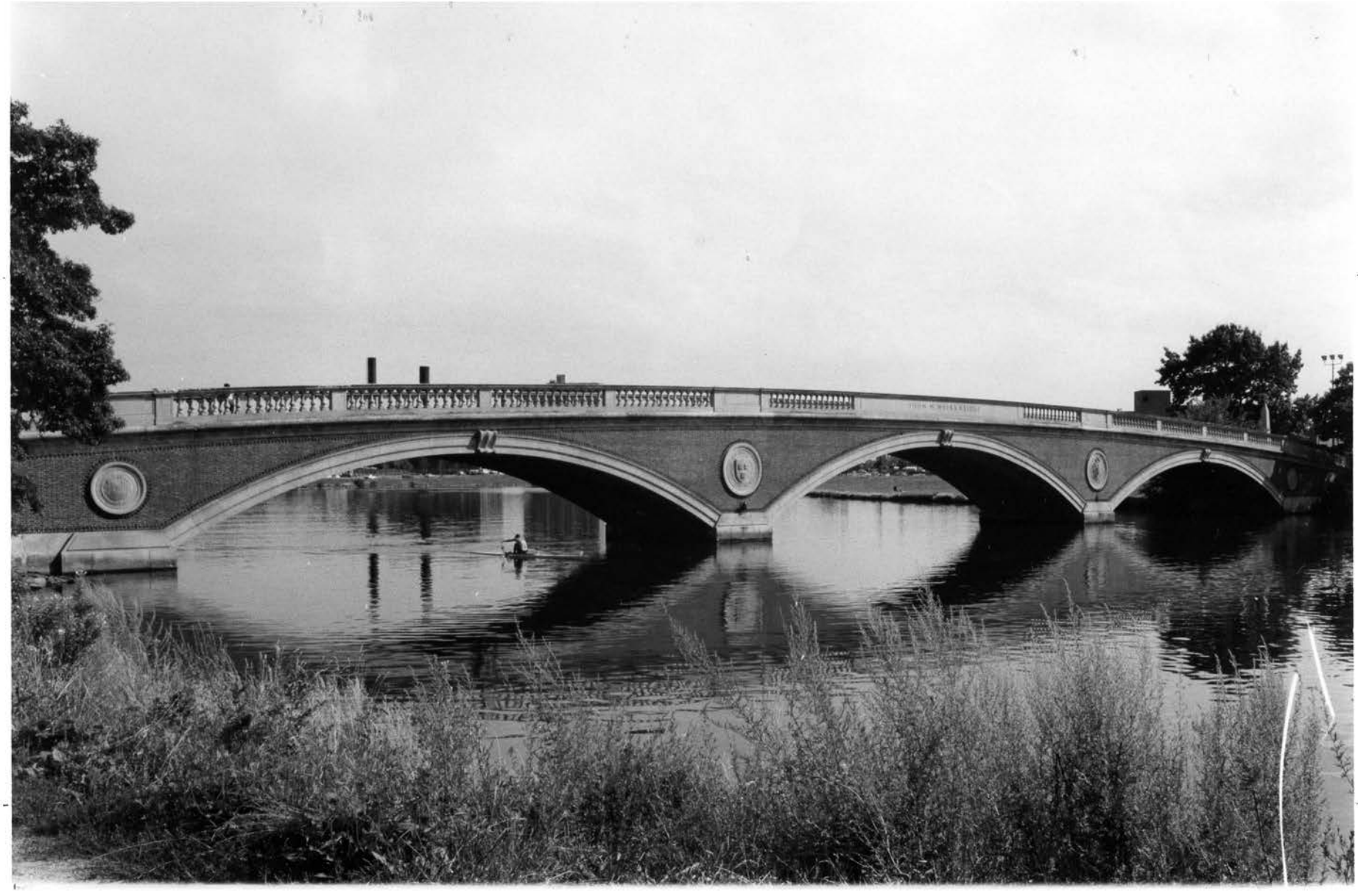


4. Looking north from Commercial Ave. toward Lechmere Canal. (Photograph: Carol Anne Clark, August 1977)

5. Looking east across the River towards Boston. Harvard Bridge crossing in background. (Photograph: Charles Sullivan, December 1977)

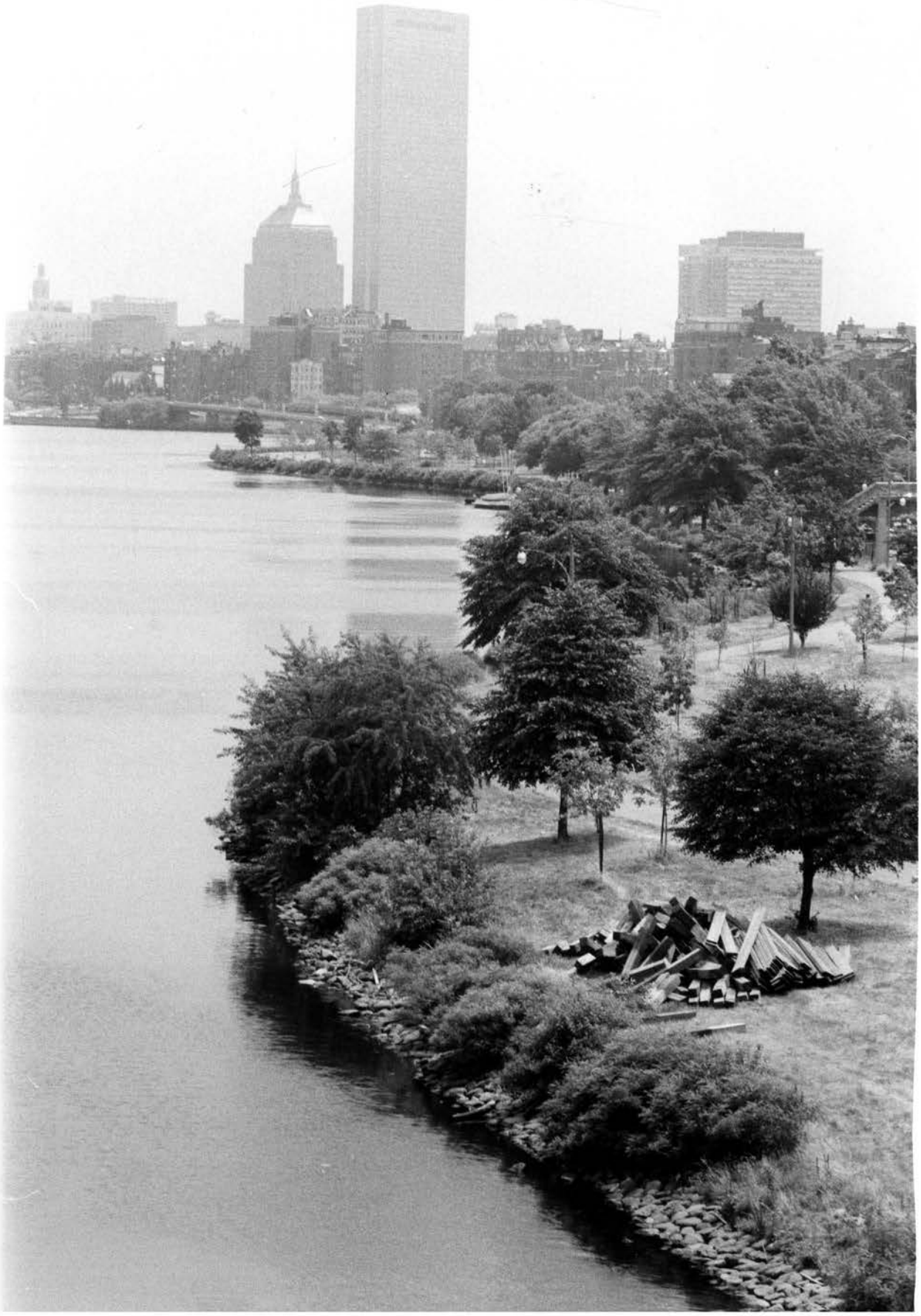
6. Memorial Drive, Cambridge. View east, downstream from vicinity of Ash Street. (Photograph: Carol Anne Clark, 1977)

7. Looking west towards the Olmstead Bathhouse at Magazine Beach, Cambridge. (Photograph: Carol Anne Clark, August 1977)



8. Looking southeast towards upstream elevation of the John W. Weeks Bridge. (Photograph: Carol Anne Clark, August 1977)

9. Weld Boat House, Harvard University, looking north from Soldiers Field Road. (Photograph: Carol Anne Clark, August 1977)

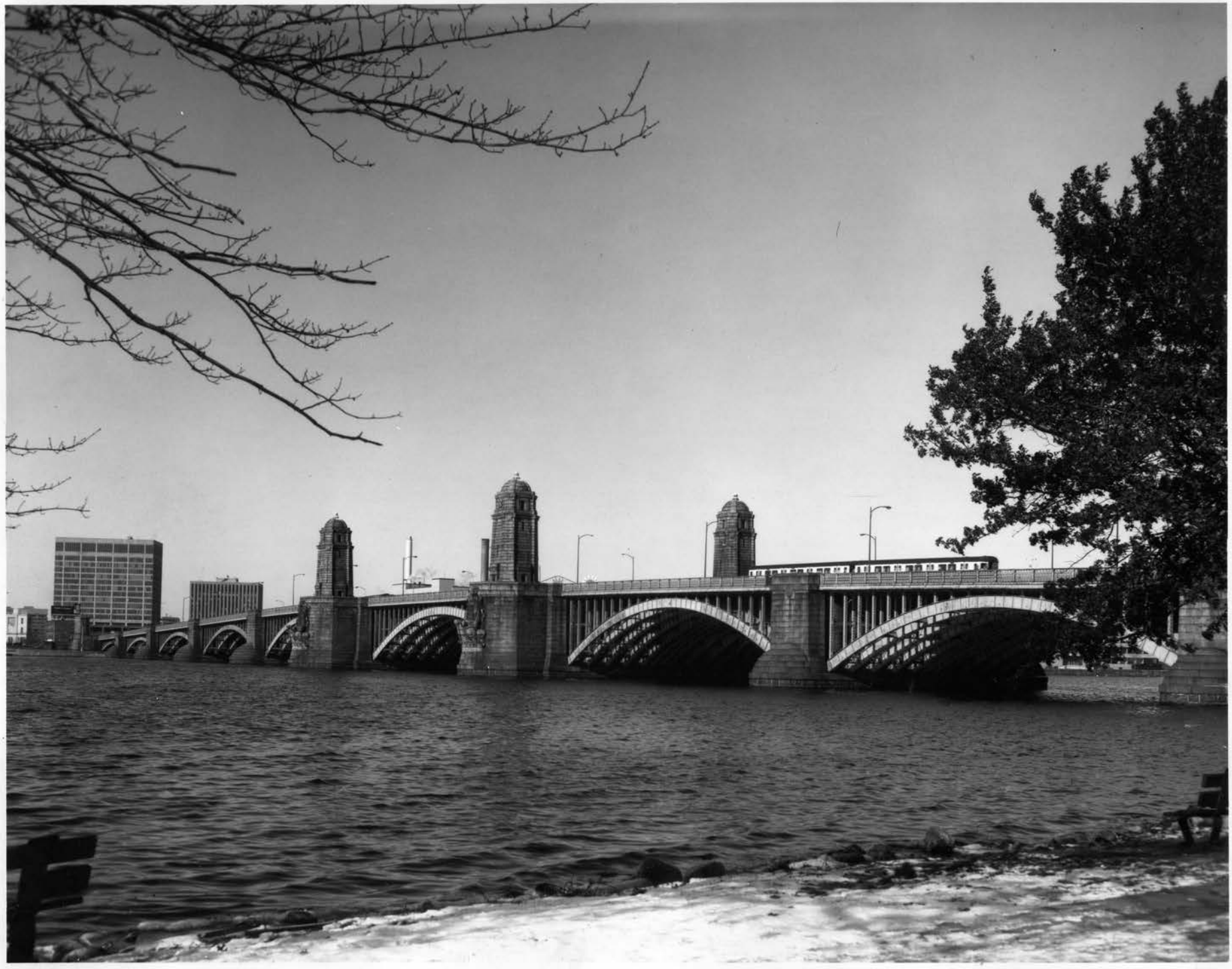


10. Looking east towards the Storrow Embankment from the Boston University Bridge. (Photograph: Carol Anne Clark, August 1977)

11. Looking east from the Harvard Bridge, toward the Storrow Embankment and Lagoon. (Photograph: Carol Anne Clark, August 1977)

12. Hatch Shell, looking northwest towards the southern elevation. (Photograph: Charles Sullivan, December 1977)

13. Looking northeast from Science Park towards the MDC Lockhouse and Police Station. (Photograph: Charles Sullivan, December 1977)



14. Longfellow Bridge, Cambridge & Boston. View west from Boston shore. (Photograph: Charles Sullivan, December 1977)

15. Looking east toward the Science Museum and the Charles River Dam. (Photograph: Charles Sullivan, December 1977)

Appendix H

Best Management Practices Plan

Memo

To: Varin Ang, MIT

From: Heather Ballantyne, P.G. and Ileen Gladstone, P.G., LSP, LEED AP

Cc: Stephanie O'Brien, Walsh Brothers

Date: March 15, 2018

Re: Best Management Practice Plan

A Notice of Intent (NOI) for a National Pollution Discharge Elimination System (NPDES) Remediation General Permit (RGP) has been submitted to the U.S. Environmental Protection Agency (EPA) in anticipation of temporary dewatering required for the construction of the New Vassar Street Residence Hall on the MIT Campus in Cambridge, Massachusetts. This Best Management Practice Plan (BMPP) has been prepared as an Appendix to the RGP NOI and will be posted at the Site during construction dewatering activities. Construction dewatering will be performed in accordance with Project Specification 31-2319- Dewatering, the NPDES RPG, the project Storm Water Pollution Prevention Plan (SWPPP). Copies of the Dewatering Specification and SWPPP are attached.

Water Treatment and Management

The current intent of the project dewatering activities is to recharge water on-site. However, if this is not possible, it will be discharged to the nearby municipal storm water drainage system after treatment. At a minimum, treatment will consist of pumping dewatering effluent to a sedimentation tank and bag filters to remove suspended solids. If necessary, the treatment system will be expanded to include additional components to meet the effluent limits specified in the RGP.

Treated effluent will then be discharged to one of three potential storm drains on Vassar Street (Fig. 1). The storm drains are connected to the City of Cambridge storm drainage system and discharge to Outfall D10OF0000 on the Charles River.

Dewatering effluent will be pumped directly to the treatment system to minimize handling.

Discharge Monitoring and Compliance

If dewatering to the storm water drainage system is necessary, monitoring and compliance sampling will be required under the RGP.

The operator will perform daily monitoring consisting of checking the condition of the treatment system, recording flow rates and discharge quantities, and verifying the flow path of the discharged effluent. The flow will be measured by the flowmeter installed in the treatment system. Flow will be maintained by regularly monitoring flow and adjusting the amount of construction dewatering as needed.

Compliance Sampling will include collection from the intake of the treatment system (influent) and the discharge after treatment (effluent) on:

- The first day of discharge, and on one non-consecutive day of discharge within the first week.
- Weekly for the first month (i.e. weeks 2, 3, and 4)
- Monthly after the first month.

The list of contaminants required by the U.S. EPA to be monitored under the NPDES RGP will be identified by EPA at the time the permit is issued. As required by the NPDES RGP, samples collected in the first week (a total of two influent and two effluent samples) require an expedited laboratory turnaround time of 72-hours. Subsequent samples require a standard 5-day turnaround time. Treatment system adjustments will be based on the compliance sampling results.

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

Maintenance

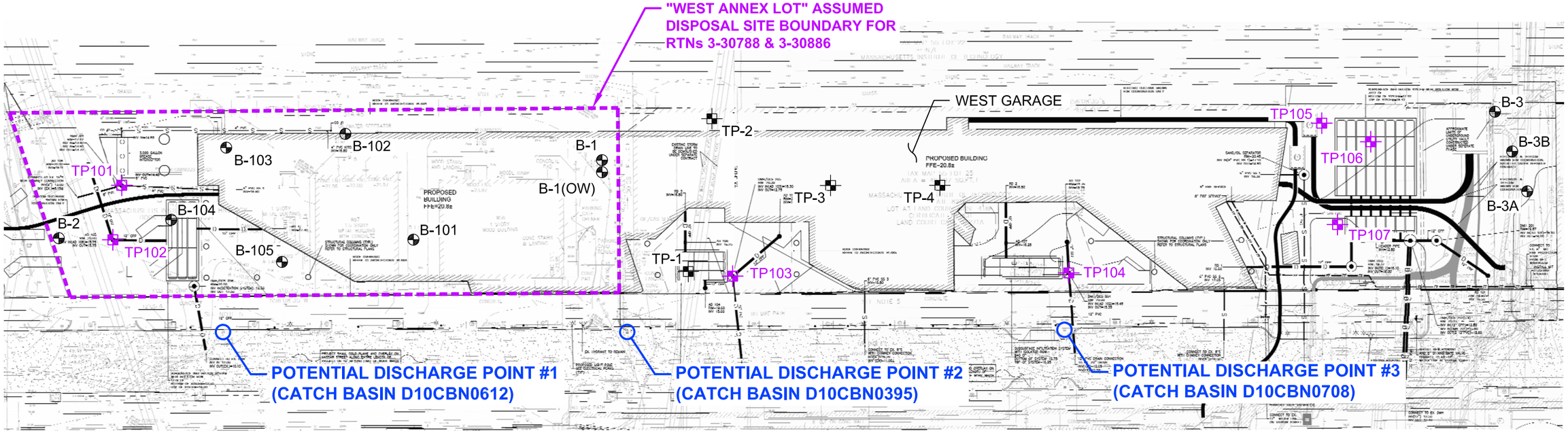
Regular maintenance and periodic cleaning will be performed to ensure proper operation of the treatments system. Regular maintenance will include daily checks of treatment system components including the sedimentation tank, bag filters, hoses, pumps, and the flow meter. Repairs and replacement of treatment system components will be made as necessary.

Management of Treatment System Materials

Sediment from the tank used in the treatment system will be characterized and transported off-site for reuse, recycling, or disposal. Filter bags and any media added to the treatment system will be replaced and or disposed of as necessary.

Additional Site Controls

Potential runoff to and from the Site will be minimized by erosion control measures installed and maintained in accordance with project specifications and drawings, and the attached SWPPP. Procedures for proper handling and spill prevention are included in the site are also included in the SWPPP. Staging areas for equipment or materials that may be possible sources of pollution should be established away from any dewatering activities, to the extent practicable. Security of the treatment system will be addressed within the overall site security plan for the project.



LEGEND:

TEST PIT, GEI 2018

BORING, GEI 2017
(OW) INDICATES OBSERVATION WELL INSTALLED

TEST PIT, GEI 2017

0 50 100
Approximate Scale, Feet

NOTES:

1. BASE PLAN FROM *"NEW VASSAR ST DORMITORY, 125 VASSAR STREET CAMBRIDGE, MA, SITE UTILITY PLAN,"* SHEETS C-101A AND C-101B PROVIDED BY DiMELLA SHAFFER AND DATED 11/17/17.

Best Management Practices Plan New Vassar Street Residence Hall Cambridge, Massachusetts	GEI Consultants	SUBSURFACE EXPLORATIONS PLAN
Massachusetts Institute of Technology Cambridge, Massachusetts	Project 1701323	February 2018 Fig. 1

\\geiconsulta B:\Working\MIT\1701323 MIT Vassar Street Residence Hall\00_CAD\Figures\NPDES noi\1701323-04.dwg - 2/16/2018

Section 31 2319 DEWATERING AND CONTINGENCY TREATMENT SYSTEM

PART 1 - GENERAL

1.0 GENERAL PROVISIONS

A. This section does not stand alone. Comply with all Contract Documents, Conditions of the Contract, Division 1 General Requirements, and other documents.

B. This section does not define a subcontract. Comply with Construction Manager's Subcontract Scope of Work documents and requirements.

C. Examine all Drawings and all Project Items of the Specifications for requirements and Provisions affecting the work of this Section.

1.1 WORK INCLUDED

A. Dewatering: This Section specifies general requirements for temporary construction dewatering systems. All dewatering will be performed in accordance with the Contractor's approved dewatering plan. The contractor will furnish, install, operate, maintain, and remove all necessary wells, well points, pumps, sumps, pipelines, and other equipment for the collection, removal, and disposal of all ground water seepage including contaminants and surface runoff as required to complete the work. If approved by the Environmental Engineer, the Contractor may use on-site recharge pits for basic dewatering.

B. Discharge into an adjacent excavation (recharge pit) is required unless:

1. Discharge into a recharge pit without treatment is not allowed by applicable regulations.
2. The level of contamination in groundwater is significant, as defined in this Section.
3. Groundwater infiltration in a recharge pit exceeds the infiltration capacity of the subsurface soils.

C. Contingency Treatment System: If required in the opinion of the Environmental Engineer, install, operate, and maintain a Contingency Treatment System according to approved design submittal and as specified in Part 3 of this Section to comply with a National Pollution Discharge Elimination System (NPDES) Remediation General Permit (RGP). Remove system and all associated wastes from site upon completion of dewatering work.

1.2 RELATED WORK

A. Section 31-2300 - Earthwork.

B. Section 00-7319 - Health and Safety

C. Section 02-6000 – Excavated Materials Management

1.3 APPLICABLE REGULATIONS

A. Work covered by this Section is subject to regulations and policies including, but not limited to:

1. "Massachusetts Contingency Plan" (MCP), 310 CMR 40.0000.
2. "Massachusetts Hazardous Waste Regulations," 310 CMR 30.00.
3. "Solid Waste Management Facility Regulations," 310 CMR 19.00.
4. "Site Assignment Regulation for Solid Waste Facilities," 310 CMR 16.0000.
5. "Ambient Air Quality Standards," 310 CMR 6.00.
6. "Resource Conservation and Recovery Act," 40 CFR 261-262.
7. "Hazardous Waste Operations Emergency Response," Federal Occupational Safety and Health Act (OSHA), 29 CFR 1910.120.
8. "Interim Remediation Waste Management Policy for Petroleum Contaminated Soils," MassDEP Bureau of Waste Site Cleanup Policy No. WSC-94-400, dated April 1994.
9. "Construction of Buildings in Contaminated Areas," MassDEP Bureau of Waste Site Cleanup Policy No. WSC-00-425, dated January 2000.
10. "Reuse and Disposal of Contaminated Soils at Landfills," MassDEP Bureau of Waste Site Cleanup Prevention Policy No. COMM-97-001, dated August 15, 1997.
11. "MassDEP Similar Soils Provision Guidance," MassDEP Bureau of Waste Site Cleanup Guidance No. WSC#13-500, dated October 2, 2013.
12. "Interim Policy on the Re-use of Soil for Large Reclamation Projects," MassDEP Bureau of Waste Site Cleanup Prevention Policy No. COMM-15-01, dated August 28, 2015.
13. NPDES Permits No. MAG910000 and NH910000.

B. Conduct the Work in Compliance with the above regulations and policies as well as any changes or addenda to the same as set forth prior to the completion of work.

C. Adhere to the regulations, guidance, these Specifications, and recognized standard and regulatory practices. Construction dewatering shall be in accordance with laws, codes, ordinances, and regulations of Federal, State, and Municipal authorities having jurisdiction. The Owner and Environmental Engineer will not be responsible at any time for the Contractor's violation of any applicable local, state, or federal regulations, or endangerment of laborers or others.

1.4 CONTRACTOR SUBMITTALS

A. Within 15 days of contract award, submit to the Environmental Engineer a written Dewatering Plan describing the plan to control groundwater and surface runoff during excavations, including the point(s) of effluent discharge that will be used. Include the location and method of dewatering, water containment procedures, and water conveyance, means to be used for prevention of water pollution, disposal/discharge location, and copies of applicable permits. The Dewatering Plan shall be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts. The Dewatering Plan shall include the following:

1. Types and sizes of groundwater control systems to be used, including backup power and equipment. Plans showing the locations and arrangements of all groundwater control system components.
2. Provisions for limiting siltation, separating oil or fuel from discharge, if warranted, and for meeting discharge requirements.
3. All calculations required to demonstrate the effectiveness of the dewatering system.
4. Procedures and drawings for abandoning the dewatering system left below grade and below structures.
5. Location of the recharge pit(s), the method by which the effluent will be conveyed, and the estimated infiltration capacity of the recharge pit(s).

B. If a Contingency Treatment System is required, submit the following:

1. A system design and operating plan to the Environmental Engineer for review and approval prior to system installation and start up. The submittal shall include:

    a. Layout drawings and site location plan including equipment sizes and capacities.
    b. Operating plan including monitoring and maintenance schedule. The operating plan will, at a minimum, meet the requirements of the NPDES RGP.
    c. Stamps and signatures by licensed professionals for the design of the Contingency Treatment System.
    d. Licensure information for the Grade 2 (or higher) Wastewater Treatment Plant operator who will operate and maintain the Contingency Treatment System, in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0041(9)).
    e. Name(s) of transporters and disposal facilities who will be transporting and/or receiving waste collected from the Contingency Treatment System.
    f. Type of flow meter that shall be used to measure volume of treated water discharged from the Contingency Treatment System. Include calibration plan and methods.

2. Submit treatment system discharge flow meter calibration records and flow readings.
3. Immediately notify the Environmental Engineer of any shut-downs or operation malfunctions of the contingency treatment system.
4. Provide personnel and equipment to assist the Environmental Engineer perform field testing or to collect samples, if requested.
5. Submit copies of waste manifest documentation associated with waste collected from Contingency Treatment System after dewatering work is complete.

PART 2 - PRODUCTS

2.1 CONTINGENCY TREATMENT SYSTEM

A. Include properly sized and designed unit operations necessary to meet the requirements of the NPDES RGP, these may include fractionation tank(s), a bag filtration system, activated carbon for organic contaminant removal, and treatment units for metals removal.

B. Provide additional storage units to handle quantities of water in excess of the treatment system capacity to allow work to proceed without interruptions.

C. Provide equipment to process dewatering effluent containing non-aqueous phase liquids, if encountered.

D. Provide flow meter at discharge locations to allow accurate measurement of the flow rate and cumulative flow volume.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Comply with all rules, regulations, laws, and ordinances of the Commonwealth of Massachusetts, and of all other authorities having jurisdiction. Provide without additional cost to the Owner all labor, materials, equipment, and services necessary to make the work comply with such requirements.

B. Conduct groundwater discharge in a manner that will not result in interference with other work or damage to adjacent properties, pavements, and other surfaces, buildings, structures, utilities, and the environment.

C. Groundwater discharge includes groundwater and surface water runoff that have entered the excavation.

D. Grade and ditch the site to direct surface runoff away from open excavations and subgrade surfaces.

3.2 DEWATERING

A. Install and maintain temporary trenches, pumps, drain pipes, sumps, wells, and other equipment to keep all excavations dry as specified in Section 31-2300 Earthwork. Collect and remove from construction excavations all ground water seepage and surface runoff.

1. Install filters for all pumps to prevent silt and fine sand from being pumped with the water.
2. Under no circumstances place fill, place concrete, or install piping and appurtenances in excavations containing standing water. Keep utility trenches free from water until pipe joint material has hardened. Protect newly made and existing concrete and masonry from damage resulting from dewatering work using canvas, tar paper, or by such other sufficient method approved by the Engineer
3. Dispose of dewatering discharge into recharge pit(s) or drainage structure(s) in accordance with the Dewatering Plan, and if necessary the Contingency Treatment System plan, approved by the Environmental Engineer. For each proposed discharge location, obtain approval from the Environmental Engineer prior to discharge.
4. Seal wells with grout after dewatering operations are complete.

3.3 DISPOSAL OF DEWATERING DISCHARGE

A. Dewatering discharge into an adjacent excavation (recharge pit) is required unless it is not allowed by applicable regulations, or contaminant concentrations in groundwater are greater than MassDEP reporting thresholds for groundwater category RCGW-2, or groundwater infiltration into a recharge pit exceeds the infiltration capacity of the subsurface soils.

1. Construct dewatering pits in accordance with Section 02-6000, Excavated Materials Management and Section 31-2300, Earthwork.
2. For each recharge pit, obtain approval of recharge pit location from the Environmental Engineer prior to discharge into recharge pit.
3. For each recharge pit, obtain soil classification from the Environmental Engineer prior to locating the recharge pit and excavating soil from recharge pit area.

B. If groundwater discharge to a recharge pit is not performed, discharge groundwater to a nearby structure as determined by the Environmental Engineer.

1. Discharge groundwater from excavations to storm sewers, sanitary sewers, or combined sewer only after Environmental Engineer has obtained a NPDES RGP.

a. The Environmental Engineer will prepare the Notice of Intent (NOI) for the RGP. Groundwater data for NPDES RGP testing parameters from a monitoring well within the proposed excavation area and the associated discharge outfall area are available from the Environmental Engineer.

b. The Contractor will sign the NOI for the RGP as the Operator.
c. The Owner will sign the NOI for the RGP as the Owner.

2. Disposal of the discharge water will be in accordance with all applicable state and federal regulations; other applicable regulations, and with the MassDEP Bureau of Waste Site Cleanup (BWSC) Policy "Construction of Buildings in Contaminated Areas."

C. Dewatering discharge will be conducted and disposed of in a manner that will not results in interference with other work or damage to adjacent properties, pavements or other surfaces, buildings, structures, utilities, or the environment.

3.4 CONTINGENCY TREATMENT SYSTEM

A. Design and provide a Contingency Treatment System for the dewatering discharge if required by the Environmental Engineer. Furnish all labor, materials and equipment, and perform all operations required to design, furnish, install, test, operate, and maintain the water treatment equipment, including: storage tanks, pumps, process equipment, water treatment chemicals, water meters, process controls, operator alarms, dikes, sandbags, electric power supply and distribution, and domestic water supply and distribution, as required to treat all the waste water to the effluent limit specified by the NPDES RGP.

B. At a minimum, the WTS should include equipment for settling of suspended solids and oil separation (fractionation tank or the like) and use of filtration (bag filters or the like) to remove suspended solids. Other WTS components, including activated carbon canisters (or similar), may be required to meet the NPDES RGP discharge requirements. Provide equipment as needed based on the WTS design and discharge requirements.

C. Discharge the treated effluent from the WTS at a location approved by the Engineer.

D. Place equipment at a location approved by the Engineer.

E. Arrange components and provide means to contain any spills or overflows from the treatment process.

F. Provide spill containment for any water treatment chemicals stored or used.

G. Provide additional erosion and sediment control measures, as necessary and in accordance with Erosion and Sedimentation Controls, Section 31-2500, to ensure that all components of the WTS are enclosed.

H. Perform a pre-production test of the entire WTS using waste water representative of dewatering effluent. Prior to discharge of treated water, analytical test results for treated samples collected under the supervision of the Engineer must demonstrate that the treated water complies with the discharge permit requirements.

I. For night operation, all areas of treatment operation shall be adequately lit, tanks will be equipped with handrail access to tops of tanks, operators will have handheld portable devices for emergency call out and headlamps for hardhats, operation of the system will be conducted by no less than two on-site personnel. Costs for night operation are not considered a change of scope and are to be included in the Contractor’s price for completion of work.

3.5 DISPOSAL OF RESIDUALS

A. Manage and dispose of oil, settled solids, spent filtration materials, and adsorption media generated by the treatment of dewatering effluent.

3.6 SAMPLING AND CHEMICAL ANALYSIS

A. Sampling and field analyses required by the NPDES RGP permit will be the responsibility of the Contractor and witnessed periodically by the Engineer.

B. Influent and effluent sampling and laboratory analyses required by the NPDES RGP shall be performed by the Contractor.

C. All laboratory analyses will be conducted by a laboratory approved by the Engineer.

1. The Owner will be responsible to:

a. Sign as owner for the NOI for the NPDES RGP.
b. Sign as generator the waste profiles prepared by the Contractor to obtain acceptance at proposed offsite disposal facilities.
c. Approve all off-site disposal facilities.

PART 4 - COMPENSATION

4.1 METHOD OF MEASUREMENT

A. Dewatering: Measurement and Payment will not be made separately for work under this Section, except that payment will be made for treatment of dewatering discharge by a Contingency Treatment System if required for discharge of dewatering effluent.

B. Contingency Treatment System: Design, installation, and removal of the Contingency Treatment System shall be paid as a lump sum. Operation of the Contingency Treatment System shall be paid per week of dewatering discharge treated and shall include all costs for operation, maintenance, and other items incidental to the operation of the Contingency Treatment System and compliance with the NPDES RGP. Disposal of spent carbon and collected oil will be paid pound of spent carbon or gallon of collected oil based on certified manifests or other documents.

4.2 PAYMENT ITEMS

Item No.	Item Description	Units
31-2319.1	Contingency Treatment System Design, Installation, Removal	LS
31-2319.2	Contingency Treatment System Operation	Week
31-2319.3	Off-Site Disposal of Spent Carbon	Pound
31-2319.4	Off-Site Disposal of Recovered Oil	Gallon

END OF SECTION

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

MIT Garage Demo / New Vassar Street Dormitory
125 Vassar Street
Cambridge, MA 02139
General Superintendent Number: 617-590-3624

SWPPP Prepared For:

DiMella Shaffer
Douglas Rand
281 Summer Street
Boston, MA 02210
T: 617-426-5004
drand@dimellashaffer.com

SWPPP Prepared By:

Nitsch Engineering
Aaron Gallagher, PE, CFM, LEED AP BD+C
Kevin Quetti, EIT
2 Center Plaza
Boston, MA 02108
T: 617-338-0063
F: 617-338-6472

SWPPP Preparation Date:

9/25/2017

SWPPP Revision Date:

3/14/19

Estimated Project Dates:

Project Start Date: 12/4/17
Project Completion Date: 7/1/2020

Contents

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

Construction Manager
Walsh Brothers, Incorporated
Stephanie O'Brien, Project Manager
210 Commercial Street
Boston, MA 02109
T: 617-878-4800
Email address: sobrien@walshbrothers.com

Owner's Representative
Varin Ang, Senior Project Manager
195 Albany Street
Cambridge, MA
T: 617-324-2243
Email Address: vang@mit.edu

Site Contractor:

W.L. French Excavating
Stephen Britko, Project Manager
3 Survey Circle
North Billerica, MA 01862
T: 978-663-2623
Email Address: sbritko@wlfrench.com

Emergency 24-Hour Contact:

Walsh Brothers Inc.
Jim Guiry, General Superintendent
T: 617-590-3624

1.2 Stormwater Team

Construction Manager: Walsh Brothers, Incorporated

Stormwater Role/Responsibility: Responsible for overseeing the development of the SWPPP, modifications and updates to the SWPPP, and for compliance with the requirements in the 2017 Construction General Permit (CGP) (i.e., installing and maintaining stormwater controls, conducting site inspections, and taking corrective actions where required).

Contact:
Stephanie O'Brien, Project Manager
T: 617-878-4800
Email address: sobrien@walshbrothers.com

I have read the CGP and Understand the Applicable Requirements
☒ Yes
Date: 10.23.17

Site Contractor: W.L. French Excavating

Stormwater Role/Responsibility: Responsible for compliance with the requirements in this permit (i.e., installing and maintaining stormwater controls, conducting site inspections, and taking corrective actions where required).

Contact:
Steve Britko
T: 978-663-2623
sbritko@wlfrench.com

I have read the CGP and Understand the Applicable Requirements
☒ Yes
Date: 03-14-2018

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: MIT Garage Demo / New Vassar Street Dormitory
Project Street/Location: 125 Vassar Street
City/Town: Cambridge
State: Massachusetts
ZIP Code: 02139
County or Similar Subdivision: Middlesex

Project Latitude/Longitude

(Use **one** of three possible formats, and specify method)

Latitude:
1. 42º 21' 32'' N (degrees, minutes, seconds)

Longitude:
1. 71º 05' 53'' W (degrees, minutes, seconds)

Method for determining latitude/longitude:
☐ USGS topographic map (specify scale: _____) ☐ GPS
☒ Other (please specify): Google Earth

Horizontal Reference Datum:
☐ NAD 27 ☒ NAD 83 ☐ WGS 84

If you used a U.S.G.S topographic map, what was the scale? _____

Additional Project Information

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? ☐ Yes ☒ No

Are you applying for permit coverage as a "federal operator" as defined in Appendix A of the CGP?
☐ Yes ☒ No

Will there be demolition of any structure built or renovated before January 1, 1980?
☒ Yes ☐ No

If yes, do any of the structures being demolished have at least 10,000 square feet of floor space?
☒ Yes ☐ No

Was pre-development land use used for agriculture (see Appendix A of the CGP for definition of "agricultural land")?
☐ Yes ☒ No

Type of Construction Site (check all that apply): ☐ Single-Family Residential
☐ Multi-Family Residential ☐ Commercial ☐ Industrial ☒ Institutional ☐ Highway or Road
☐ Utility ☐ Other _____

2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?
☒ Yes ☐ No

Are there any surface waters that are located within 50 feet of your construction disturbances?
☐ Yes ☒ No

Table 1 – Names of Receiving Waters

Name(s) of the first surface water that receives stormwater directly from your site and/or from the MS4 (note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters)
001.Charles River

Table 2 – Impaired Waters / TMDLs (Answer the following for each surface water listed in Table 1 above)

	Is this surface water listed as "impaired" on the CWA303(d) list?	If you answered yes, then answer the following:			
		What pollutant(s) are causing the impairment?	Has a TMDL been completed?	Title of the TMDL document	Pollutant(s) for which there is a TMDL
001.	☒ YES ☐ NO	**Algal Growth, Pesticides, Oxygen Depletion, Pathogens, Habitat Alterations, Nuisance Exotic Species, Nutrients (phosphorus), Oil and Grease, Flow Alterations, PCBs, Turbidity, Total Toxics, pH**	☒ YES ☐ NO	**Final Phosphorus TMDL Report for the Lower Charles River Basin; Final Pathogen TMDL for the Charles River Watershed**	**Phosphorus; Pathogens**

Describe the method(s) you used to determine whether or not your project/site discharges to an impaired water: U.S. EPA Waterbody Quality Assessment Report- 2014 Waterbody Report for Charles River

Table 3 – Tier 2, 2.5, or 3 Waters (Answer the following for each surface water listed in Table 1 above)

	Is this surface water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If you answered yes, specify which Tier (2, 2.5, or 3) the surface water is designated as?
001.	☐ YES ☒ NO	

2.3 Nature of the Construction Activity

General Description of Project
Provide a general description of the construction project:

The project involves the demolition of an existing parking garage that was constructed in 1963 and the construction of new dormitories. The project also involves the demolition of the existing utilities for the garage and installation of new utilities for the dormitories.

Size of Construction Project

Size of Property: 1.8 acres
Total Area of Construction Disturbances: 1.8 acres
Maximum Area to be Disturbed at Any One Time: 1.8 acres

Construction Support Activities

Perimeter controls will be established prior to any construction activities on site. Any material that will be staged on site shall surrounded by hay bales. All adjacent drainage structures that will remain in operation will have inlet protection installed.

Contact Information for Construction Support Activity:
Name: Steve Britko
Telephone: 978-663-2623
Email: sbritko@wlfrench.com
Address and/or Latitude and Longitude:

Business Hours
Day-Day 7 a.m-3:30 p.m.

2.4 Sequence and Estimated Dates of Construction Activities

Phase I: Existing Garage Demolition

- Demolition and removal of existing concrete garage

- Schedule: December 4, 2017 – April 1, 2018
- Area Disturbed During Phase: 2 acres
- Install perimeter controls around site; which include silt fence with stakes, 12 inch biodegradable wattle and silt sacks for inlet protection.

Phase II: New Dormitory Construction

- Work includes, but is not limited to pre-excavation for piles, foundation excavation, installation of new water, sewer, drainage, telecom and electrical utilities, grading for slabs, site grading and installation of curbing & new pavement.

- Schedule: April 1, 2018 – July 1, 2020
- Area Disturbed During Phase: 1.8 acres
- Maintain/Install perimeter controls around site; which include silt fence with stakes, 12 inch biodegradable wattle and silt sacks for inlet protection.

2.5 Allowable Non-Stormwater Discharges

List of Allowable Non-Stormwater Discharges Present at the Site

Type of Allowable Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	☒ YES ☐ NO
Fire hydrant flushings	☒ YES ☐ NO
Landscape irrigation	☒ YES ☐ NO
Waters used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes	☐ YES ☒ NO
Water used to control dust	☒ YES ☐ NO
Potable water including uncontaminated water line flushings	☒ YES ☐ NO
External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A of the CGP) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs))	☒ YES ☐ NO
Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used.	☒ YES ☐ NO
Uncontaminated air conditioning or compressor condensate	☒ YES ☐ NO
Uncontaminated, non-turbid discharges of ground water or spring water	☒ YES ☐ NO
Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater	☒ YES ☐ NO
Construction dewatering water discharged in accordance with Part 2.4 of the CGP	☒ YES ☐ NO

Note: You are prohibited from directing pavement wash waters directly into any water of the U.S., storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control.

2.6 Site Maps

Site Maps must include the following:

a) Boundaries of the property. The map(s) in the SWPPP must show the overall boundary of the property.
b) Locations where construction activities will occur. The map(s) in the SWPPP must show the locations where construction activities will occur, including
    i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
    ii. Approximate slopes before and after major grading activities (note any steep slopes);
    iii. Locations where sediment, soil, or other construction materials will be stockpiled;
    iv. Any water of the U.S. crossings;
    v. Designated points where vehicles will exit onto paved roads;
    vi. Locations of structures and other impervious surfaces upon completion of construction; and
    vii. Locations of onsite and off-site construction support activity areas covered by the permit (see Part 1.2.1.c).
c) Locations of all waters of the U.S. within and one mile downstream of the site's discharge point. Also identify if any are listed as impaired, or are identified as a Tier 2, Tier 2.5, or Tier 3 water.
d) Areas of federally listed critical habitats within the site and/or at discharge locations.
e) Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures).
f) Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities.
g) Stormwater and authorized non-stormwater discharge locations. The permit requires the site map to show information pertaining to discharge locations including:
    i. Locations where stormwater and/or authorized non-stormwater will be discharges to storm drain inlets; and
    ii. Locations where stormwater and/or authorized non-stormwater will be discharged directly to waters of the U.S.
h) Locations of all potential pollutant-generating activities identified in Part 7.2.3.g. The permit requires identification in the site map of all potential pollutant-generating activities identified in Part 7.2.3.g.
i) Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit. The permit requires identification on the site map of the location of stormwater control measures.
j) Locations where polymers, flocculants, or other treatment chemicals will be used and stored. The permit requires identification on the site map of the locations where polymers, flocculants, or other treatment chemicals will be used and stored.

Refer to Attachment A

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Under which criterion listed in Appendix D of the CGP are you eligible for coverage under this permit?

☒ **A** ☐ **B** ☐ **C** ☐ **D** ☐ **E**

For reference purposes, the eligibility criteria listed in Appendix D of the CGP are as follows:

Criterion A. No federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's "action area" as defined in Appendix A of the CGP.

Criterion B. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your action area under eligibility Criterion A, C, D, E, or F and there is no reason to believe that federally-listed species or federally-designated critical habitat not considered in the prior certification may be present or located in the "action area". To certify your eligibility under this Criterion, there must be no lapse of NPDES permit coverage in the other operator's certification. By certifying eligibility under this Criterion, you agree to comply with any effluent limitations or conditions upon which the other operator's certification was based. You must include in your NOI the tracking number from the other operator's notification of authorization under this permit. If your certification is based on another operator's certification under Criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C in your NOI form.

Criterion C. Federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in or near your site's "action area," and your site's discharges and discharge-related activities are not likely to adversely affect listed threatened or endangered species or critical habitat. This determination may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect listed species and critical habitat. To make this certification, you must include the following in your NOI: 1) any federally listed species and/or designated habitat located in your "action area"; and 2) the distance between your site and the listed species or designated critical habitat (in miles). You must also include a copy of your site map with your NOI.

Criterion D. Coordination between you and the Services has been concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat, and must have resulted in a written concurrence from the relevant Service(s) that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Criterion E. Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has been concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat. The result of this consultation must be either:

i. a biological opinion that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or

ii. written concurrence from the applicable Service(s) with a finding that the site's discharges and discharge-related activities are not likely to adversely affect federally-listed species or federally-designated habitat.

You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Criterion F. Your construction activities are authorized through the issuance of a permit under section 10 of the ESA, and this authorization addresses the effects of the site's discharges and discharge-related activities on federally-listed species and federally-designated critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

For criterion A, indicate the basis for your determination that no federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's action area (as defined in Appendix A of the CGP). Check the applicable source of information you relied upon:

- ☐ Specific communication with staff of the U.S. Fish & Wildlife Service or National Marine Fisheries Service.
- ☐ Publicly available species list.
- ☒ Other source: NHESP data layer (October 2008 or as amended) from MassGIS, U.S. Fish and Wildlife online system Information for Planning and Conservation (IPaC) – Refer to Attachment K.

3.2 Historic Preservation

Appendix E (of the CGP), Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- ☐ Dike
- ☐ Berm
- ☐ Catch Basin
- ☐ Pond
- ☐ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- ☐ Culvert
- ☒ Other type of ground-disturbing stormwater control: Outlet Control Structure, Subsurface Infiltration System, Drain Manhole, Area Drain

If you will not be installing any ground-disturbing stormwater controls, no further documentation is required for Section 3.2 of the Template.

Appendix E, Step 2

If you answered yes in Step 1, have prior cultural resource surveys or other evaluations determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? ☒ YES ☐ NO

If yes, provide documentation of the basis for your determination. If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you are installing any stormwater controls that require subsurface earth disturbance, you must determine if these activities will have an effect on historic properties. This assessment may be based on historical sources, knowledge of the area, an assessment of the types of earth-disturbing activities you are engaging in, considerations of any controls and/or management practices you will adopt to ensure that your stormwater control related earth-disturbing activities will not have an effect on historic properties, and any other relevant factors.

Does your determination demonstrate that earth disturbances related to the installation of your stormwater controls will have no effect on historic properties? ☒ YES ☐ NO

See Attachment L.

3.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

- ☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
- ☒ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and
- ☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

Subsurface infiltration system design is by Nitch Engineering, shown on civil drawings C-101B and C-504

SECTION 4: EROSION AND SEDIMENT CONTROLS REQUIREMENTS

Section 4 of this document describes the stormwater controls that will be implemented throughout construction. The operator must install and maintain all stormwater controls in compliance with Parts 2.2 and 2.3 of the CGP. The operator must install stormwater controls by the time construction activity in any givern portion of the site begins.

The stormwater controls shall be designed and installed in accordance with good engineering practices and applicable design specifications. Specifications titled "312500- Erosion and Sedimentation Controls," dated 2/23/18 and prepared by Nitsch Engineering and details titled "Erosion and Sedimentation Control Details," dated 2/23/18 and prepared by Nitsch Engineering have been provided to the contractor under separate cover.

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances? ☐ YES ☒ NO

(Note: If no, no further documentation is required for Part 4.1 in the SWPPP Template. Continue to Part 4.2.)

4.2 Perimeter Controls

General

The site will be enclosed by a temporary construction fence as shown on the Erosion and Sedimentation Control Plan in Attachment A. Construction gates will be located at the entrance to the site as shown on the Erosion and Sedimentation Control Plan and all entrances will have stabilized construction entrances. All gates and entrances to the site will be secured during non-working hours. The areas of the site that will receive pollutant discharges will be surrounded by a Specific Perimeter Control listed below as shown on the Erosion and Sedimentation Control Plan in Attachment A. Sediment tracked offsite must be removed by the end of the same workday.

Specific Perimeter Controls

Perimeter Control # 1

- BMP Description: Silt Fence.
- Installation Schedule: Prior to the Start of Construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as described in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Perimeter Control # 2

- BMP Description: Silt Fence with Wattles.
- Installation Schedule: Prior to the Start of Construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as described in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Perimeter Control # 3

- BMP Description: Super Silt Fence.
- Installation Schedule: Prior to the Start of Construction.

- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as described in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Perimeter Control # 4

- BMP Description: Wattles.
- Installation Schedule: Prior to the Start of Construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as described in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Perimeter Control # 5

- BMP Description: Silt Fence with Straw Bales.
- Installation Schedule: Prior to the Start of Construction and/or immediately after stockpile is established.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

4.3 Sediment Track-Out

General

Gates will be located as shown on the Erosion and Sedimentation Control Plan in Attachment A to allow for construction vehicle access. Construction access points will have a stabilized construction entrance station or wheel wash station to minimize the track-out of sediment onto off-site streets, other paved areas, and sidewalks from vehicles exiting the construction site. Where sediment has been tracked out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S.

Specific Track-Out Controls

Track-Out Control # 1

- BMP Description: Street Sweeping.
- Installation Schedule: Start of construction.
- Inspection Schedule: The areas adjacent to the site should be inspected daily to determine if street sweeping is required.
- Responsible Staff Construction Manager and Site Contractor(s).

Track-Out Control # 2

- BMP Description: Stabilized Construction Entrance.
- Installation Schedule: Start of construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as described in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Track-Out Control # 3

- BMP Description: Wheel Wash Station.
- Installation Schedule: Start of construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective. condition as described in part 2.1.4 of the CGP(s). The operator must provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters. The operator must ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water. For storage of soaps, detergents, or solvents, the operator shall provide either a cover to minimze the exposure of these detergents to precipitation and to stormwater, or a similarily effective means designed to minimze discharge of pollutants from these areas.
- Responsible Staff: Construction Manager and Site Contractor.

4.4 Stockpiled Sediment or Soil

General

All soil stockpiles will be located outside of any natural buffers and away from existing and proposed catch basins and area drains and outside of proposed infiltration system footprints. A sediment barrier shall be installed along all downgradient perimeter areas. Examples of sediment barriers include silt fence, super silt fence, or wattles.

You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S.

For stockpiles that will be unused for 14 or more days, a cover such as a tarp or blown straw shall be provided or temporary stabilization should be provided (consistent with Part 2.2.14 of the CGP).

Specific Stockpile Controls

Stockpile Control # 1

- BMP Description: Silt Fence.
- Installation Schedule: Immediately after stockpile is established.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Stockpile Control # 2

- BMP Description: Wattles.
- Installation Schedule: Immediately after stockpile is established.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
  Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Stockpile Control # 3

- BMP Description: Tarp.
- Installation Schedule: When stockpile will remain inactive for 14 or more calendar days.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
  Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Stockpile Control # 4

- BMP Description: Straw Bales.
- Installation Schedule: Immediately after stockpile is established.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
  Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Stockpile Control # 5

- BMP Description: Blown Straw.
- Installation Schedule: When stockpile will remain inactive for 14 or more calendar days.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
  Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- Responsible Staff: Construction Manager and Site Contractor(s).

Stockpile Control # 6

- BMP Description: Hydroseeding.
- Installation Schedule: When stockpile will remain inactive for 14 or more calendar days.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective

condition as decribed in part 2.1.4 of the CGP.
Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.

- Responsible Staff: Construction Manager and Site Contractor(s).

4.5 Minimize Dust

General
Disturbed land will be temporarily stabilized as required by the CGP. Dust will be minimized using measures including sprinkling/irrigation, vegetative cover, mulch, and/or stone. Stockpiles will be handled in accordance with section 4.4 of the SWPPP.

Earth-disturbing activities are considered temporarily ceased when work will not resume for a period of 14 or more calendar days. Stabilization shall be initiated when earth-disturbing activities are temporarily or permanently ceased. Stabilization activities shall be complete within 14 calendar days after the initiation of soil stabilization measures.

Specific Dust Controls

Dust Control # 1

- BMP Description: Sprinkling/Irrigation.
- Installation Schedule: As needed throughout earthwork activities as determined by the site contractor and construction manager.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Dust Control # 2

- BMP Description: Straw or Mulch.
- Installation Schedule: As needed throughout earthwork activities as determined by the site contractor and construction manager. When disturbed land will remain inactive for 14 or more calendar days.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

4.6 Minimize the Disturbance of Steep Slopes

General

Steep slopes are defined as slopes of 15% or greater in grade. No steep slopes are proposed as part of this project. The EPA notes that the requirement to minimize disturbances to steep slopes does not apply to the creation of stockpiles.

4.7 Preserve Native Topsoil

Onsite native topsoil shall be preserved, unless infeasible. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

Stockpiling topsoil at off-site locations or transferring topsoil to other locations is an example of a way to preserve naïve topsoil.

The contractor shall perform construction sequencing such that earth materials are exposed for a minimum of time before they are covered, seeded, or otherwise stabilized.

4.8 Minimize Soil Compaction

General

In areas where infiltration practices will be installed or areas of the site where final vegetative stabilization will occur, soil compaction shall be minimized. This includes restricting vehicle access and equipment use.

Areas used for post-construction infiltration shall be constructed after all ground surfaces are fully stabilized when feasible. If proposed infiltration areas are constructed prior to the site being fully stabilized, additional erosion controls shall be installed. All stockpiled and material storage areas shall be located outside of the areas proposed for post-construction infiltration.

Areas of post-construction landscaping shall be constructed after all ground surface are fully stabilized. If proposed landscaped areas are constructed prior to the site being fully stabilized, additional erosion controls shall be installed. All soil stockpiles and material storage areas shall be located outside of the areas proposed for post-construction landscaping where feasible. Where this is not feasible, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth prior to planting.

4.9 Storm Drain Inlets

General
All existing and proposed storm drain inlets affected by construction activities should be protected using an Inlet Sediment Filter as shown on the Erosion and Sedimentation Control Plan provided in Attachment A.

Clean or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

Specific Storm Drain Inlet Controls

Storm Drain Inlet Control # 1

- BMP Description: Inlet Sediment Filter.
- Installation Schedule: Prior to the Start of Construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25” or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective. condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Storm Drain Inlet Control # 2

- BMP Description: Inlet Protection with Gravel.
- Installation Schedule: Prior to the Start of Construction .
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a

storm event 0.25" or greater and as required by the manufacturer.

- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Storm Drain Inlet Control # 3

- BMP Description: Inlet Protection with Block and Gravel.
- Installation Schedule: Prior to the Start of Construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

4.10 Minimize Erosion of Stormwater Conveyances

There are no proposed stormwater conveyance channels associated with this project.

4.11 Sediment Basins

There are no proposed sediment basins associated with this project.

4.12 Chemical Treatment

There are no proposed chemical treatments associated with this project.

4.13 Dewatering Practices

Dewatering will occur in a way that minimizes the discharge of pollutants in ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation. Dewatering water shall be treated in compliance with Section 2.4 of the CGP and water with visible floating solids or foam may not be discharged.

Any applicable permits shall be obtained from local permitting authorities.

Dewatering Control # 1

- BMP Description: Sediment basin or Sediment Trap.
- Installation Schedule: Start of construction of stormwater conveyance channel.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Dewatering Control # 2

- BMP Description: Sediment socks.
- Installation Schedule: Start of construction of stormwater conveyance channel.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective

condition as decribed in part 2.1.4 of the CGP.

- Responsible Staff: Construction Manager and Site Contractor(s).

Dewatering Control # 3

- BMP Description: Dewatering Tanks.
- Installation Schedule: Start of construction of stormwater conveyance channel.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

Dewatering Control # 4

- BMP Description: Filtration Systems.
- Installation Schedule: Start of construction of stormwater conveyance channel.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater and as required by the manufacturer.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

4.14 Other Stormwater Controls

Any changes in construction activity that that include means of stormwater control not included in this document will be identified, the SWPPP will be amended, and the appropriate erosion and sedimentation controls will be implemented.

4.15 Site Stabilization

Initiate the installation of stabilization measures immediately in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days. Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.

Site Stabilization Practice #1

☐ *Vegetative* ☒ *Non-Vegetative*
☒ *Temporary* ☐ *Permanent*

- BMP Description: Soil Stabilization Mat.
- Installation Schedule: As/if required.
- Maintenance and Inspection: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater.
- Responsible Staff: Construction Manager and Site Contractor(s).

Site Stabilization Practice #2

☒ *Vegetative* ☐ *Non-Vegetative*
☒ *Temporary* ☐ *Permanent*

- BMP Description: Temporary Seeding.

- Installation Schedule: As/if required.
- Maintenance and Inspection: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25” or greater.
- Responsible Staff: Construction Manager and Site Contractor(s).

SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff:

- Stockpiles and construction staging
- Clearing and grubbing operations
- Grading and site excavation
- Topsoil stripping
- Landscape operations
- Soil tracking offsite from construction vehicles
- Runoff from unstabilized areas
- Construction debris

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Combined Staging Area – fueling activities, equipment maintenance, sanitary facilities, and hazardous waste storage
- Materials Storage Area – building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.
- Construction Activity-paving, curb installation, concrete pouring, and building construction

Staging areas are shown on the Erosion and Sedimentation Control Plan provided in Attachment A.

Construction Site Pollutants

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site** (or reference SWPPP site map where this is shown)
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Chlorinated hydrocarbons, organophosphates, carbonates, arsenic	Herbicides used for noxious weed control
Fertilizers	Nitrogen, phosphorous	Newly seeded areas
Plaster	Calcium sulphate, calcium carbonate, sulfuric acid	Building construction
Cleaning Solvents	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Asphalt	Oil, petroleum distillates	Streets and parking lots
Concrete	Limestone, sand pH, chromium	Curb and gutter, sidewalk, building construction
Glue, Adhesives	Polymers, epoxies	Building construction
Paints	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic	Building construction
Curing compounds	Naphtha	Curb and gutter, building construction
Wood preservatives	Stoddard solvent, petroleum distillates, arsenic, copper, chromium	Timber pads, bracing, building construction

Hydraulic Oils/fluids	Mineral oil	Leaks/broken hoses from equipment
Gasoline	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment/staging area
Diesel Fuel	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment/staging area
Kerosene	Coal oil, petroleum distillates	Secondary containment/staging area
Antifreeze/coolant	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment
Sanitary toilets	Bacteria, parasites, and viruses	Staging area

5.2 Spill Prevention and Response

BMP Description: Spill kit, vehicle washing, silt sack catch basin protection, silt fence
Installation Schedule: Start of construction activity
Maintenance and Inspection: Minimum weekly & as necessary
Responsible Staff: Construction Manager and Site Contractor

- Major vehicle maintenance onsite is prohibited
- Re-fueling of vehicles within 25 feet of a drainage structure is prohibited
- Spill kit shall be kept onsite consisting of:
  - Gloves
  - Absorbent mats
  - Drip pan

Spill Prevention and Control Plan

- Refer to contractor's Spill Plan included in the site specific safety plan.
- Manufacturers' recommended spill control methods will be posted onsite and site personnel will be made aware of the requirements.

- Cleanup supplies will be kept onsite in a materials storage area. This equipment will include: goggles, brooms, dustpans, mops, rags, gloves, oil absorbent, sawdust, plastic and metal trash cans, and other materials and supplies specifically designated for cleanup.
- All spills will be immediately cleaned up after discovery.
- The spill area will be well ventilated.
- Cleanup personnel will wear suitable protective clothing.
- Spills of toxic and/or hazardous material will be reported to state, local, and Federal authorities, as required by law. Spills shall also be reported immediately to the owner.
- A spill incident report will be filed detailing the amount and extent of the spill, material(s) involved, and effectiveness of the cleanup. This report will be on file at the Construction Manager/Site Contractor office, as well as kept onsite in the field office. A copy shall also be filed with the Hazard Communication Coordinator (HCC).

The Construction Manager/Site Contractor will designate someone onsite that will serve as the Spill Cleanup Coordinator. At least two other personnel will be designated as alternate spill coordinators. All spill control personnel will be trained in spill prevention, control, and cleanup. The names of the responsible personnel will be posted at the jobsite office of the Construction Manager/ Site Contractor.

5.3 Fueling and Maintenance of Equipment or Vehicles

General

Minor vehicle and equipment emergency maintenance can be performed onsite away from drainage structures. Major vehicle and equipment maintenance must be performed offsite. Equipment/vehicle storage areas and any onsite fuel tanks will be inspected weekly and after storm events. Equipment and vehicles will be inspected for leaks, equipment damage, and other service problems on each day of use. Any leaks will be repaired immediately or the equipment/vehicle will be removed from the site.

Minor vehicle and equipment emergency maintenance shall occur when a vehicle cannot be safely removed from the site. The vehicle should be repaired so it can be taken off-site so that the rest of the maintenance can occur.

Major vehicle maintenance onsite is prohibited. Re-fueling or maintenance of vehicles within 25 feet of a drainage structure shall be prohibited. Drip pans, drip cloths, or absorbent pads should be used when replacing spent fluids. The fluids should be collect and stored prior to being disposed of offsite.

Specific Pollution Prevention Practice #1

- BMP Description: Spill Kit.
- Installation Schedule: Onsite throughout construction.
- Responsible Staff: Construction Manager and Site Contractor.

Specific Pollution Prevention Practice #1

- BMP Description: Drip Pans, Drip Cloths, Absorbent Pads.
- Installation Schedule: Onsite throughout construction.
- Responsible Staff: Construction Manager and Site Contractor.

5.4 Washing of Equipment and Vehicles

General

Vehicle and equipment washout areas shall be constructed by the contractor so that no untreated water enters the storm drain system. Soaps, detergents, or solvents must be stored in a way to prevent these detergents from coming into contact with rainwater, or a similarly effective means designed to prevent the discharge of pollutants from these areas.

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1

- BMP Description: Designated vehicle/equipment washing areas
- Installation Schedule: Start of construction.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater.
- Responsible Staff: Construction Manager and Site Contractor

Pollution Prevention Practice # 2

- BMP Description: Spill kit, vehicle washing, straw bale catch basin protection, silt fence
- Installation Schedule: Start of construction activity
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a storm event 0.25" or greater.
- Responsible Staff: Construction Manager and Site Contractor

5.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

5.5.1 Building Products

General

The contractor will recycle all construction materials possible. For materials that cannot be recycled, solid waste will be disposed of in accordance with DEP Regulations for Solid Waste Facilities, 310 CMR 10.00.

Any building materials required to be stored onsite will be stored at a combined staging and materials storage area as shown on the CMP. Larger items will be elevated by appropriate methods to minimize contact with runoff. The storage area will be inspected weekly and after storm events. It will be kept clean, organized, and equipped with appropriate cleaning supplies.

Building product usage shall follow the following good housekeeping BMPs:

- The Responsible Staff: Construction Manager or Site Contractor representative will inspect daily for inspection of the work area to ensure proper management of waste materials.
- Store only enough material onsite required for that job as to satisfy current construction needs.
- Store required materials in tightly lidded containers under cover.
- Store materials in original containers with clearly legible labels.
- Separate and store materials apart from each other.
- Do not mix materials unless specifically in accordance with manufacturers' recommendations.
- Use all products from a container before disposing of the container.
- Follow manufacturers' instructions for handling, storage, and disposing of all materials.
- All materials shall be stored in an area to prevent the discharge of pollutants from building products.

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1

- BMP Description: Perimeter Protection control around Stockpiles.
- Installation Schedule: Start of construction/ Immediately after stockpile is established.
- Inspection Schedule: Once every 7 days or once every 14 days and within 24 hours of a

	storm event 0.25" or greater.
· Maintenance:	Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP. Remove any sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
· Responsible Staff:	Construction Manager and Site Contractor(s).

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

- In storage areas, provide either (1) cover to minimize the exposure of these chemicals to precipitation and to stormwater or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.
- Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

- Only skilled personnel in a designated area will perform fueling of vehicles onsite.
- Vehicles used onsite will be monitored for fuel and oil leaks.
- Vehicles used onsite will be maintained in good working order.
- Asphalt substances will be applied in accordance with manufacturers' recommendations.
- The use of petroleum products as a release agent for asphalt transport trucks is prohibited.
- Vehicle fueling will only be done in vehicle fueling areas located by the contractor. See section 5.3 of the SWPPP.
- The contractor shall be responsible for locating the fuel storage and re-fueling area onsite to minimize disturbance to construction activates and site area.
- Construction equipment not in active use for 5 minutes or more will be turned off.

5.5.4 Hazardous or Toxic Waste

(Note: Examples include paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.)

General

- Keep products in their original containers.
- Original container labels should be clearly visible.
- Material safety data sheets will be kept onsite and be available.
- Follow all state, local, and Federal regulations regarding the handling, use, storage, and disposal of hazardous material.

Paints:

- All paint containers will be tightly sealed when not in use.
- Remove excess paint in original labeled containers from the jobsite.
- Paint will not be disposed of onsite. Remove excess paint material from the site and legally dispose of.
- Paint shall not be disposed of in the storm drain system.

5.5.5 Construction and Domestic Waste

General
The contractor will manage domestic waste onsite. The contractor will provide waste containers of sufficient size and number to contain construction and domestic wastes. The waste container lids will be kept closed when not in use and lids will be closed at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either a cover or a similarly effective means designed to minimize discharge of pollutants. Clean up immediately if containers overflow.

Pollution Prevention Practice # 1

- BMP Description: Dumpster.
- Installation Schedule: Start of construction.
- Maintenance and Inspection: Weekly and covered daily.
- Responsible Staff: Construction Manager and Site Contractor(s).

Pollution Prevention Practice # 2

- BMP Description: Litter/debris pick-up.
- Installation Schedule: Start of construction.
- Maintenance and Inspection: Daily.
- Responsible Staff: Construction Manager and Site Contractor(s).

5.5.6 Sanitary Waste

All sanitary waste portable toilets shall be positioned so that they are secure and will not be tipped or knocked over, and located away from any stormwater inlets or conveyances.

Pollution Prevention Practice # 1

- BMP Description: Porta John.
- Installation Schedule: Start of construction.
- Maintenance and Inspection: As manufacturer requires.
- Responsible Staff: Construction Manager and Site Contractor(s).

5.6 Washing of Applicators and Containers used for Paint, Concrete, or Other Materials

General
Washing of applicators and containers used for paint, concrete, or other materials shall follow the following good housekeeping BMPs:

- An effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, concrete, form release oils, curing compounds, and other construction materials.
- All washwater must be directed into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.
- Washout and cleanout wastes should be handled as follows:
  - Do not dump liquid wastes into storm sewers.
  - Dispose of liquid wastes in accordance with applicable requirements.
  - Remove and dispose of hardened concrete waste consistent with the handling of other construction wastes.
- Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas.

Pollution Prevention Practice # 1

- BMP Description: Designated applicator and container washing areas.
- Installation Schedule: Start of construction.
- Maintenance and Inspection: Daily.
- Responsible Staff: Construction Manager and Site Contractor(s).

5.7 Fertilizers

General
If fertilizer is required onsite, installation will follow the following guidelines:

- Fertilizers will be used at the application rates called for in the specifications for the project.
- Once applied, fertilizer will be worked into the soil to minimize wash off from irrigation and stormwater.
- Fertilizer will be stored under cover.
- The contents of partially used fertilizer bags will be transferred to re-sealable, watertight containers clearly labeled with their contents.
- Avoid applying before heavy rains.
- Never apply to frozen ground.
- Never apply to stormwater conveyance channels with flowing water.

5.8 Other Pollution Prevention Practices

Any changes in construction activity that produce other allowable non-stormwater discharges will be identified, the SWPPP will be amended and the appropriate erosion and sedimentation controls will be implemented.

Control # X

- BMP Description: Description of control to be installed.
- Installation Schedule: Approximate date of installation.
- Inspection Schedule: Pick Inspection schedule from above.
- Maintenance: Ensure that all stormwater controls remain in effective condition as decribed in part 2.1.4 of the CGP.
- Responsible Staff: Construction Manager and Site Contractor(s).

SECTION 6: INSPECTION AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Personnel Responsible for Inspections

Jim Guiry, General Superintendent

W.L. French Excavating
Site Superintendent TBD

(Note: All personnel conducting inspections must be considered a "qualified person." CGP Part 4.1.1 clarifies that a "qualified person" is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.)

Inspection Schedule

Specific Inspection Frequency

The contractor shall inspect and maintain erosion control measures, and remove sediment therefrom, once every 7 days and within 24 hours of a storm event 0.25" or greater. OR Once every 14 days and within 24 hours of a storm event 0.25" or greater.

Rain Gauge Location:

NOAA Rain Gauge Location or Onsite Rain Gauge Location

Reductions in Inspection Frequency (if applicable):

Inspection frequency may be reduced to twice per month (no more than 14 days apart) for the first month in areas of the site where the stabilization steps outlines in Parts 2.2.14 of the CGP have been completed. After the first month, inspection frequency may be reduced to once per month. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3 as applicable. You must document the beginning and ending dates of this period in the SWPPP.

Inspection frequency may be reduced to once per month and within 24 hours of the occurrence of a storm event of 0.25 inches or greater if the project is located in an arid, semi-arid, or drought-stricken area and construction is occurring during the seasonally dry period or a period in which drought is predicted to occur. If this inspection frequency is followed, you must document the beginning and ending dates of this period in the SWPPP.

Inspections can be temporarily suspended under the following conditions:

- Earth-disturbing activity is suspended due to frozen condition;
- Runoff is unlikely due to continuous frozen conditions that are likely to continue at the site for at least three months based on historic seasonal averaged. **If unexpected weather conditions make discharges likely, the operators must immediately resume the regular inspection schedule**;
- Land disturbances have been suspended; and
- All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a of the CGP.

Inspection frequency may be reduced to once per month under the following conditions:

- The operator is still conducting earth disturbing activities under frozen conditions;
- Runoff is unlikely due to continuous frozen conditions that are likely to continue at the site for at least three months based on historic seasonal averages. **If unexpected weather conditions make discharges likely, the operator must immediately resume the regular inspection schedule**; and
- Except for areas in which the operator is conducting earth-disturbing activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a of the CGP.

Inspection Report Forms
Copies of inspection reports are in Attachment D.

6.2 Corrective Action

Personnel Responsible for Corrective Actions
Jim Guiry, General Superintendent
W.L. French Excavating, TBD Site Superintendent

Corrective Action Forms
A copy of the Corrective Action Form is in Attachment E.

6.3 Delegation of Authority

Duly Authorized Representative(s) or Position(s):
Walsh Brothers, Inc.
Jim Guiry
General Superintendent
125 Vassar St.
Cambridge, MA 02139
617-719-1153
Pmckay@walshbrothers.com

SECTION 7: TRAINING LOG

Refer to Attachment I for a Training Log to be completed for each SWPPP training session**.**

Table 7-1: Documentation for Completion of Training

Name	Date Training Completed

SECTION 8: CERTIFICATION AND NOTIFICATION

Operator – Owner's Representative

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.

Name: _____ Title: _____

Signature: _____ Date: _____

Operator – Walsh Brothers, Inc.

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.

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP ATTACHMENTS

Attachment A – Site Maps

Attachment B – 2017 Construction General Permit

Attachment C – NOI and EPA Authorization Email

Attachment D – Inspection Form

Attachment E – Corrective Action Form

Attachment F – SWPPP Amendment Log

Attachment G – Subcontractor Certifications/Agreements

Attachment H – Grading and Stabilization Activities Log

Attachment I – SWPPP Training Log

Attachment J – Delegation of Authority Form

Attachment K – Endangered Species Documentation

Attachment L – Historic Preservation Documentation

Attachment M – Order of Conditions

Attachment A – Site Maps

Attachment B – 2017 Construction General Permit

Attachment C – NOI and EPA Authorization e-mail

Attachment D – Inspection Form

Attachment E – Corrective Action Form

Attachment F – SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Attachment G –Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform onsite. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Attachment H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	**Description of Grading Activity**	**Description of Stabilization Measure and Location**	**Date Grading Activity Ceased** (Indicate Temporary or Permanent)	**Date When Stabilization Measures Initiated**

Attachment I – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: (*check as appropriate)*

- q **Sediment and Erosion Controls**
- q **Stabilization Controls**
- q **Pollution Prevention Measures**
- q **Emergency Procedures**
- q **Inspections/Corrective Actions**

Specific Training Objective:_____

_____

Attendee Roster: (*attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Attachment J – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Attachment K – Endangered Species Documentation

Attachment L – Historic Preservation Documentation

Attachment M – Order of Conditions