GEI Consultants

Consulting Engineers and Scientists

March 9, 2022
Project 2100989

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

Ms. Shauna Little
EPA/OEP RGP Applications Coordinator
Environmental Protection Agency
Office of Ecosystem Protection
RGP NOI Processing
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Dear Ms. Little:

Re: Notice of Intent
NPDES Remediation General Permit
Proposed Garvey Street Mixed Use Development
35 Garvey Street
Everett, Massachusetts

On behalf of GS Garvey Owner, LLC, 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 in Appendix A.

Site Information

This NOI has been prepared for the discharge of dewatering effluent during construction of the proposed Garvey Street mixed use development located at the intersection of Garvey Street and Revere Beach Parkway in Everett, Massachusetts (the Property; Fig. 1). The Property is a vacant 4.7-acre industrial property at 35 Garvey Street in Everett, Massachusetts, just south of Route 16/Revere Beach Parkway (Figs. 1 and 2). 35 Garvey Street, LLC purchased the property in March 2015. The Site was occupied and owned by Market Forge Industries from 1916 until 2015. Market Forge Industries was a manufacturer of industrial ovens and other steel products. J. Moore Company operated a machine shop on the eastern portion of the Site from 1918 until 1985. The abutting properties are also commercial or industrial properties.

The Property has been largely covered by buildings for much of the last 100 years. The Site buildings were razed in 2015. The Property housed multiple aboveground storage tanks (ASTs) and underground storage tanks (USTs) in and adjacent to the former buildings for fuel oil and solvent storage. These tanks were reportedly removed as part of the building demolition in 2015.

GEI Consultants, Inc.
400 Unicorn Park Drive, Woburn, MA 01801
781.721.4000

Site investigations have identified PCBs in soil ranging from 1 ppm to 50,900 ppm. Because PCBs in soil are at concentrations greater than (>) 50 ppm, the site requires characterization and cleanup in compliance with the requirements of the Toxic Substances Control Act (TSCA) regulations, along with the Massachusetts Contingency Plan (MCP) regulations. The Property is a Massachusetts Department of Environmental Protection (MassDEP) disposal site (Release Tracking Number [RTN] 3-28681). As the Property is an open MassDEP disposal site, a MassDEP Bureau of Resource Protection fee is not required.

Redevelopment activities will include the excavation of PCB and other contaminated soils during construction. The planned construction at the Property is a single mixed-use building with 450 residential units. The building will generally consist of two levels of concrete podium garage, with commercial space on a portion of the ground level and four levels of timber-framed residential space above the garage.

Construction dewatering will be necessary during excavation of contaminated soils. The intent of the project is to recharge groundwater on site. However, if this is not possible, it will be discharged to nearby Town of Everett catch basins, which discharge to Unnamed Waterbody along railroad tracks via Outfall 06-02 and then ultimately to the Island End River (Mystic River), in accordance with the RGP (Fig. 3).

GS Garvey Owner purchased the property on March 4, 2022.

Owner and Operator Information Owner

Owner	**Operator**
GS Garvey Owner, LLC	Lockwood Remediation Technologies, LLC
1 Federal Street	89 Crawford Street
Boston, MA 02110	Leominster, MA 01453
Contact: Chris Legocki	Contact: Paul Lockwood
Position Title: Director, Development	Position Title: President
Phone Number: 617.947.2267	Phone Number: 774.450.7177 x101
Email: chris.legocki@greystar.com	Email: plockwood@lrt-llc.net

As the owner, GS Garvey Owner, LLC has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications. TBD, as the operator, 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. The owner and operator are applying for coverage under the RGP as co-permittees.

Receiving Water Information

Receiving water quality data, collected by GEI on November 19, 2021 on behalf of GS Garvey Owner, LLC, was used to support this NOI. A sample from Unnamed Waterbody along the railroad tracks, the receiving water, was collected approximately 15 feet south of the City of Everett outfall. The sample was submitted to ESS Laboratory, Inc. (ESS) of Cranston, Rhode Island for analysis of metals, hardness and ammonia. The results are summarized in Table 1 and the associated laboratory data report is in Appendix B. Receiving water temperature was obtained in the field and is noted on the effluent limitations input calculation page in Appendix A.

The U.S. Geological Survey (USGS) StreamStats program does not calculate a seven-day-ten-year flow 7Q10 for the receiving water (an unnamed drainage waterbody). MassDEP suggested

that StreamStats does not calculate a 7Q10 because the receiving water is manmade. Therefore, the 7Q10 of the receiving water is 0 ft^3/s and the Dilution Factor is 0 confirmed by the MassDEP. The StreamStats report, and MassDEP's December 22, 2021 email confirmation of the 7Q10 and Dilution Factor are in Appendix A.

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 2.

Source Water Information

We evaluated the proposed influent by collecting two groundwater samples from the Property. The groundwater samples were collected from monitoring wells MW201F on November 17, 2021 and EN-15D on November 23, 2021 (Fig. 2) and submitted to ESS for analysis of the parameters required under the NPDES RGP. In addition, the pH and temperature 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 these samples are provided in Appendix C.

The analytical results indicated the presence of ammonia, cyanide, chloride, metals (arsenic, chromium, copper, iron, lead, nickel, and zinc), and the following VOCs: benzene, ethylbenzene, toluene, xylenes, naphthalene, 1,4-dioxane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichlorobenzene, 1,2-dichloroethane, cis-1,2-dichlorethtne, methylene chloride, tetrachloroethylene, trichloroethene, and vinyl chloride. The measured pH range of the groundwater within the project site was approximately 6.7 standard units (s.u.). Although not detected in these groundwater samples, other contaminants in soil have included PCBs and poly aromatic hydrocarbons (PAHs). These contaminants also have the potential to be present in the source water.

Treatment System Information

During construction, treatment of the collected water will be treated to remove suspended solids using a sedimentation tank and bag filters, liquid phase reactivated carbon and cartridge filtration. If required, the following contingent treatment may also be used:

- aerators
- air strippers with vapor phase carbon
- bone char carbon.

The proposed conceptual treatment system is shown in the process flow diagram in Fig. 4.

Although final products for additional treatment will be determined by the operator or their designated contractor, example product information, including Safety Data Sheets (SDSs), associated hazards, operation recommendations, and product information for GAC are in Appendix A.

Chemical Aided Settling System

One (1) chemical aided settling system for the application of LRT E-50 coagulant and LRT nonionic dry polymer (flocculant) will be used to control total suspended solids (TSS) in the effluent. The chemical aided settling system will be installed at the influent tank at the head of the water treatment system. The system will include two chemical feed pumps, mixers, injection tubing and a flocculant "make-down" system used to prepare batches of dry polymer. The appropriate chemical dosing necessary for efficient TSS settling will be determined in the field

via a "jar test." Dosing can vary throughout the project with changes in influent water characteristics such as flowrate, pH, TSS concentrations.

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

The SDS Sheets for the chemicals used in the chemical aided settling system are attached (E50 Coagulant and 9911 Polymer) in Appendix A.

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

1. The addition of the coagulant and flocculant will not add any pollutants in concentrations which exceed permit effluent limitations;

2. The addition of the coagulant and flocculant will not result in the exceedance of any applicable water quality standard; and

3. The addition of the coagulant and flocculant will not add any pollutants that would justify the application of permit conditions that are different from or absent in the permit.

The addition of coagulants and flocculants to control TSS values is a standard treatment technique for temporary construction dewatering; it is not expected to exceed applicable permit limitations and water quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water.

pH Adjustment System

A pH adjustment system that is capable of raising pH will be implemented if required to meet the permit requirements. The pH system is designed to raise the pH with sodium hydroxide and includes an automatic metered acid feed system with a mix tank, acid feed pumps and setpoint controls that maintain the pH approved by the permit, usually set between 6.5 and 8.3. The pH is continuously monitored and the sodium hydroxide will only be added if the setpoints are exceeded. The sodium hydroxide will be stored in 55-gallon drums with secondary containment systems in place (overpack drum). Please note that the realistic average use of sodium hydroxide/day will be 0.5 gallons or less. The maximum application concentration for sodium hydroxide would be 66 mg/L.

Additives 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 (BMPP).

Confirmation Requirements of Part 2.5.3.d.ii

1. The addition of a coagulant and flocculant will not add any pollutants in concentrations which exceed permit effluent limitations;

2. The addition of the coagulant and flocculant will not result in the exceedance of any applicable water quality standard;

3. The addition of the coagulant and flocculant will not add any pollutants that would justify the application of permit conditions that are different from or absent in the permit.

The addition of coagulants and flocculants to control TSS values is a standard treatment technique for temporary construction dewatering; it is not expected to exceed applicable permit limitations and water quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water;

4. The addition of a pH conditioner will not add any pollutants in concentrations which exceed permit effluent limitations;

5. The addition of a pH conditioner will not result in the exceedance of any applicable water quality standard;

6. The addition of a pH conditioner will not add any pollutants that would justify the application of permit conditions that are different from or absent in the permit."

The addition of sodium hydroxide to control and adjust pH is a standard treatment technique for temporary construction dewatering; it is not expected to exceed applicable permit limitations and water quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water.

Discharge Information

We anticipate treated effluent discharge rates to be about 250-350 gallons per minute (gpm) or less, with occasional peak flows of approximately 500 gpm during significant precipitation events. The treated water will be discharged to one catch basin at the intersection of Second Street and Revere Beach Parkway, one catch basin at the intersection of Second Street and Spring Street, and one catch basin within Spring Street. These catch basins are identified on Fig. 3 as Proposed Discharge Points 1, 2 and 3. According to plans we reviewed from the City of Everett's online Storm Sewer Map on December 21, 2021, these catch basins are part of the City storm water drainage system that discharges to an outfall (06-02) at Unnamed Waterbody south of Spring Street and MBTA railroad tracks, approximately 600 feet from the Site. The discharge path and ultimate discharge outfall at Unnamed Waterbody is shown on Fig. 3. Unnamed Waterbody follows the railroad tracks for approximately 0.26 mile before entering an inlet control structure, which ultimately discharges to an outfall at Island End River (Mystic River).

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 D. 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 Property and surrounding areas obtained from both databases are in Appendix E. Based on the review, the Property is not a listed as a U.S National Historic Place, but the Property is listed as historic place in the MACRIS database.

The point where the discharge reaches the receiving water (i.e., Outfall 06-02 to Unnamed Waterbody) is not listed as a National Historic Place. The inventory listing from the MACRIS database is included in Appendix E. Files related to the district have not yet been digitized on the National Register of Historic Places database, but the National Register of Historic Places Inventory-Nomination Form is included in Appendix E.

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 project-specific information. The current intent of project dewatering activities is to recharge some groundwater on site. However, it is likely that discharge to the nearby storm water drainage system after treatment will be required. On behalf of GS Garvey Owner, LLC, we are requesting coverage under the NPDES RGP for the discharge of treated construction dewatering effluent to the surface waters of Mystic River via Unnamed Waterbody and Town of Everett 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 E).

Discharge of treated water is scheduled to begin in April 2022, although recharge to on-site recharge pits is planned if possible.

Please contact me at 781.721.4012 or igladstone@geiconsultants.com or Catherine Malagrida at 339.221.3521 or cmalagrida@geiconsultants.com if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.

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

C. Malagrida

Catherine M. Malagrida, P.G.
Project Manger

MEG/CMM/ISG:jam
Enclosures
c: Chris Legocki, Greystar Development
Wo Ngan, Greystar Development
Paul Lockwood, Lockwood Remediation Technologies, LLC

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Tables

Table 1. Chemical Testing Results - Receiving Water (Unnamed Waterbody)
35 Garvey Street
Everett, Massachusetts

		Sample Location:	OUTFALL
		Sample Date:	11/19/2021
Analyte	**Method**	**Units**	
Total Metals		ug/L	
Antimony	200.8		<5.0
Arsenic	3113B		<2.5
Cadmium	200.8		<0.2
Chromium, Total	200.7		2.4
Chromium VI	3500Cr B-2009		<10.0
Copper	200.7		19.4
Iron	200.7		1430
Lead	200.8		13
Mercury	245.1		<0.2
Nickel	200.7		<5.0
Selenium	3113B		<5.0
Silver	200.7		<1.0
Zinc	200.7		115.0
Other			
Hardness	6010C	ug/l	57700
Ammonia as Nitrogen	350.1	ug/l	0.42
Temperature	Field	Deg C	12.5
pH	Field	S.U.	7.75

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.
4. S.U. = standard units.
5. Temperature and pH were measured in the field.

Table 2. Chemical Testing Results - Groundwater
35 Garvey Street
Everett, Massachusetts

					Sample Location:	MW201F	EN-15D
					Sample Date:	11/17/2021	11/23/2021
					Screen Interval:	3-10	25-30
Analyte	**Method**	**Units**	**MCP RCGW-2**	**Site Specific Effluent Limits**			
Volatile Organic Compounds (VOCs)		ug/l					
Benzene			1000	5		<0.5	11.70
Ethylbenzene			5000	NS		<0.5	7.90
Toluene			40000	NS		<0.5	273.00
Xylenes (Total)			3000	NS		<0.5	32.50
Total BTEX	524.2		NS	100		ND	325.10
Naphthalene			700.0	NS		<0.5	1.80
1,4-Dioxane	8270D-SIM		6,000	200		0.31	2.02
Total Non-Halogenated VOCs	524.2		NS	NS		ND	327.00
1,1,2-Trichloroethane			900	5		<0.5	241.00
1,1-Dichloroethane			2,000	70		<0.5	6.10
1,1-Dichloroethene			80	3.2		<0.5	83.00
1,2-Dichlorobenzene			2,000	600		<0.5	0.80
1,2-Dichloroethane			5	5		<0.5	2.20
cis-1,2-Dichlorothene			200	70		<0.5	31,200
Methylene Chloride			2,000	4.6		<0.5	1.70
Tetrachloroethene			50	3.3		<0.5	4.60
Trichloroethene			5	5		<0.5	126,000
Vinyl Chloride			2	2		<0.2	1,210
Total Halogenated VOCs	524.2		NS	NS		0.31	158,749.40
Semivolatile Organic Compounds (SVOCs)	625.1 SIM	ug/l					
Total Phthalates			NS	190		ND	ND
Total Group I PAHs			NS	1		ND	ND
Total Group II PAHs			NS	100		ND	ND
Fuel Parameters		ug/l					
Total Petroleum Hydrocarbons	1664A		5,000	5.0		<5	<5
Methyl-tert-Butyl Ether	524.2		50,000	70		<0.5	<0.5
Ethanol	ASTM D3695		NS	Report		<10	<10
Total Metals		ug/L					
Antimony	200.8		8,000	206		<5.0	<25.0
Arsenic	3113B		900	10		<2.5	74.30
Cadmium	200.8		4	10.2		<0.2	<5.0
Chromium, Total	200.7		300	NS		<2.0	157
Chromium III	200.7		600	323		<10.0	157
Chromium VI	3500Cr B-2009		300	323		<10.0	<10.0
Copper	200.7		100,000	242		24.70	97.80
Iron	200.7		NS	1,000		1,330	105,000
Lead	200.8		10	160		<2.0	32.80
Mercury	245.1		20	0.739		<0.2	<0.2
Nickel	200.7		200	1,450		20.70	63.00
Selenium	3113B		100	235.8		<5.0	<25.0
Silver	200.7		7	35.1		<1.0	<5.0
Zinc	200.7		900	420		21.60	358.00
Dissolved Metals		ug/L					
Antimony	200.8		8,000	206		<5.0	<25.0
Arsenic	3113B		900	10		<2.5	31.90
Cadmium	200.8		4	10.2		<0.2	<5.0
Chromium, Total	200.7		300	NS		<2.0	35.10
Copper	200.7		100,000	242		8.00	12.90
Iron	200.7		NS	1,000		1,340	7,850
Lead	200.8		10	160		<2.0	<10.0
Mercury	245.1		20	0.739		<0.20	<0.20
Nickel	200.7		200	1,450		20.20	<25.0
Selenium	3113B		100	235.8		<5.0	<5.0
Silver	200.7		7	35.1		<1.0	<5.0
Zinc	200.7		900	420		21.40	51.80
Polychlorinated Biphenlyls (PCBs)	608.3	ug/l					
Total PCBs			5	0.000064		ND	ND

Table 2. Chemical Testing Results - Groundwater
35 Garvey Street
Everett, Massachusetts

					Sample Location:	MW201F	EN-15D
					Sample Date:	11/17/2021	11/23/2021
					Screen Interval:	3-10	25-30
Analyte	**Method**	**Units**	**MCP RCGW-2**	**Site Specific Effluent Limits**			
Other							
Ammonia as Nitrogen	350.1	mg/L	NS	Report		3.05	1.76
Cyanide	4500 CN CE	ug/l	30	5.2		389.00	<5.00
Chloride	300.0	mg/L	NS	Report		1,170	8,840
Phenols	420.1	ug/l	NS	1,080		<50	<50
Hardness	200.7	ug/l	NS	NS		365,000	4,730,000
Total Residual Chlorine	4500CL D	ug/l	NS	50		<20.0 A	<20.0 A
Total Suspended Solids	2540D	mg/l	NS	30		<5	3,500
Temperature	Field	Deg C	NS	NS		17.00	13.30
pH	Field	S.U.	NS	6.5 to 8.3		6.73	6.71

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 June 20, 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 3.5 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.

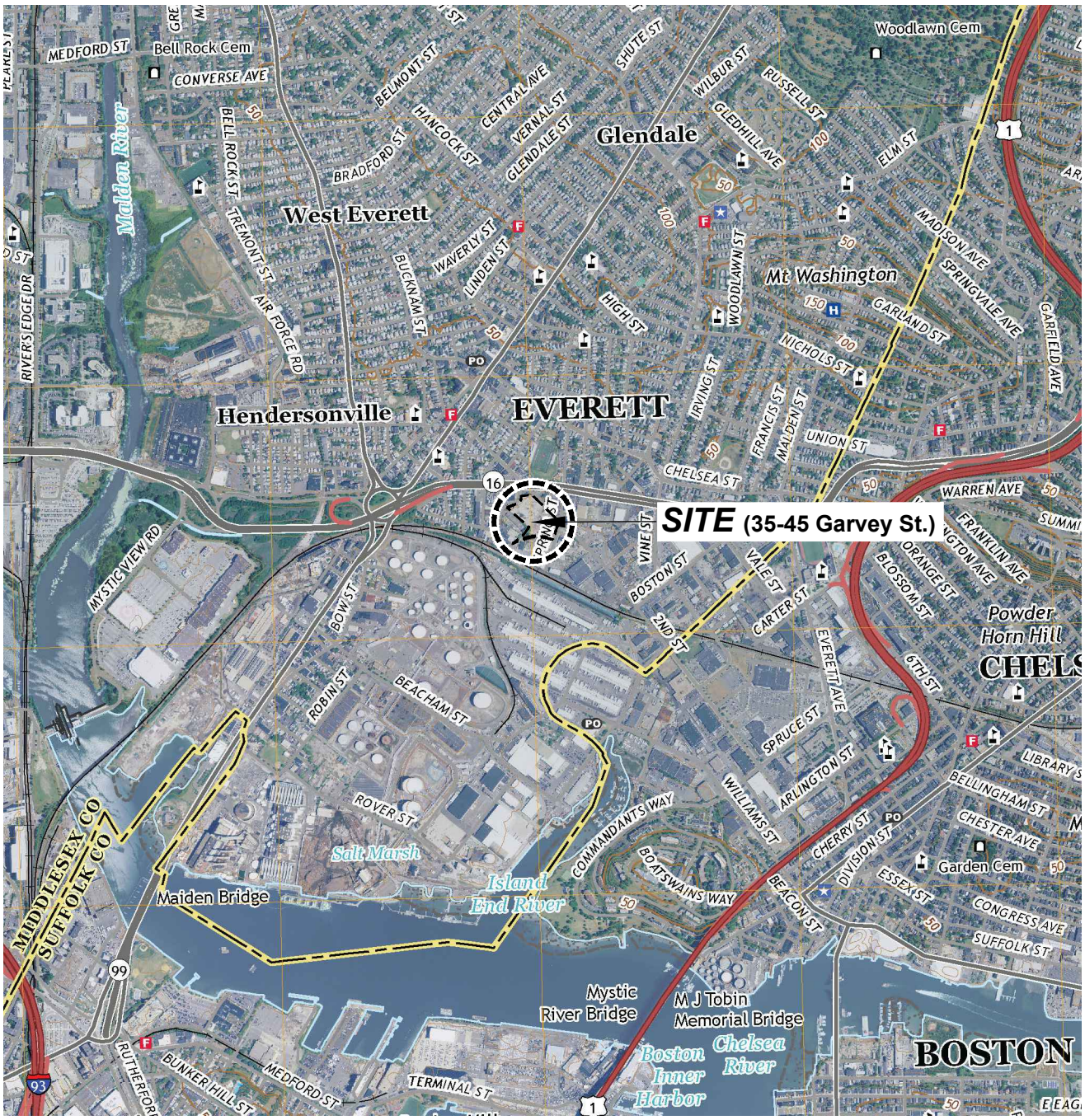
Footnotes:

1. Total Non-Halogenated VOCs include benzene, ethylbenzene, toluene, and xylenes (BTEX), acetone, 1,4-dioxane, and phenols.
2. Total Halogenated VOCs include carbon tetrachloride, 1,2-dichlorobenzene, 1,3-dicholorobenzene, 1,4-dichlorobenzene, 1,1-dichlorethane, 1,2-dicholorethane, 1,2,-dichloroethene, ethylene dibromide, methylene chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, cis-1,2 dichloroethylene, and vinyl chloride.
3. Group I PAHs include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene.
4. Group II PAHs include: acenaphthene, acenaphthylene, anthracene, bezon(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

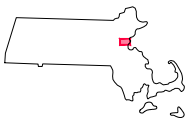
Qualifying Notes:

A The result is estimated due to the exceedance of holding time.

Figures



This Image is from U.S.G.S. Topographic 7.5 Minute Series
Boston North, MA Quadrangle, 2018.
Datum is North American Vertical Datum of 1988 (NAVD88).
Contour Interval is 10 Feet.



MASSACHUSETTS
QUADRANGLE LOCATION

NPDES RGP Notice of Intent 35-45 Garvey Street Everett, Massachusetts	GEI Consultants	SITE LOCATION MAP
Greystar Development, LLC Everett, Massachusetts	Project 2100989	March 2022 Fig. 1

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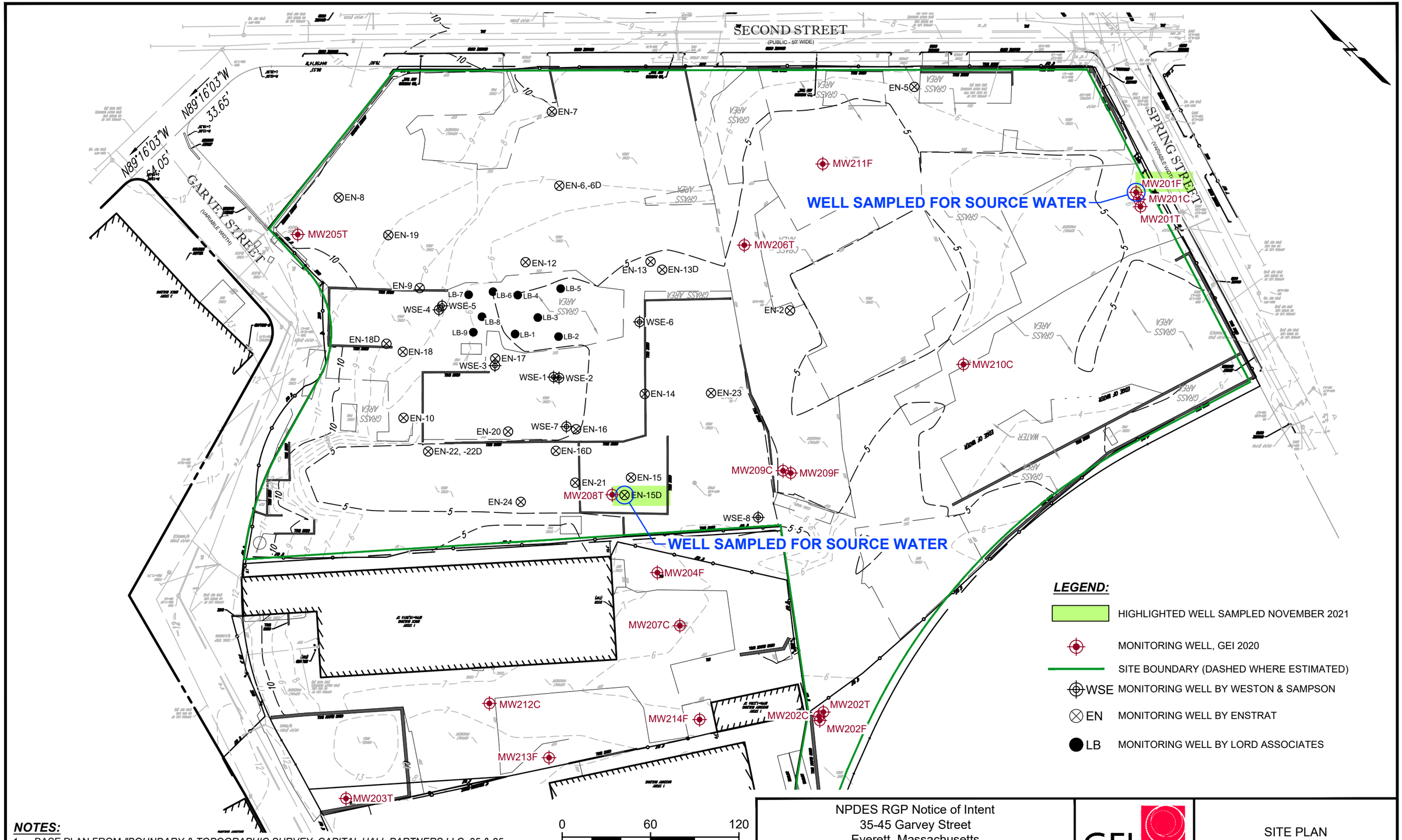

LEGEND:

- HIGHLIGHTED WELL SAMPLED NOVEMBER 2021
- MONITORING WELL, GEI 2020
- SITE BOUNDARY (DASHED WHERE ESTIMATED)
- WSE MONITORING WELL BY WESTON & SAMPSON
- EN MONITORING WELL BY ENSTRAT
- LB MONITORING WELL BY LORD ASSOCIATES

NOTES:

1. BASE PLAN FROM *"BOUNDARY & TOPOGRAPHIC SURVEY, CAPITAL HALL PARTNERS LLC, 35 & 25 GARVEY STREET, MAP K7, LOTS 88, 67 &66, CITY OF EVERETT, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS,"* PREPARED BY CONTROL POINT ASSOCIATES, INC. DATED 04-23-19.

0 60 120

SCALE: 1" = 60'

NPDES RGP Notice of Intent
35-45 Garvey Street
Everett, Massachusetts

Greystar Development, LLC
Everett, Massachusetts

GEI Consultants

SITE PLAN

Project 2100989 | March 2022 | Fig. 2

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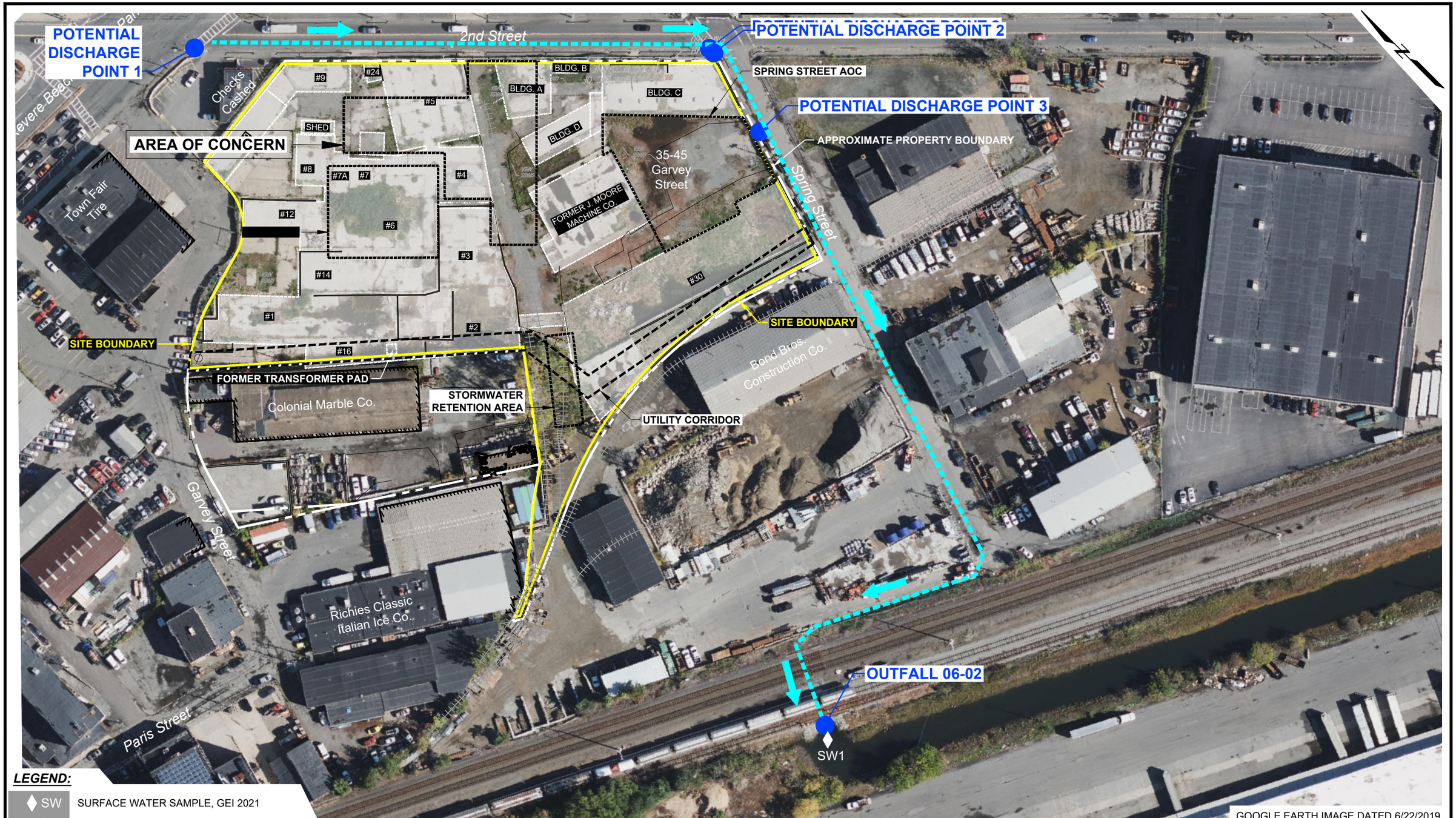

LEGEND:

- SW — SURFACE WATER SAMPLE, GEI 2021
- PATH OF DISCHARGE
- SITE BOUNDARY (DASHED WHERE ESTIMATED)
- HISTORIC BUILDING (APPROXIMATE)
- HISTORIC RAILROAD SPUR REMOVED OR COVERED BY 1985 (APPROXIMATE)

0 100 200

SCALE: 1" = 100'

GOOGLE EARTH IMAGE DATED 6/22/2019.

NPDES RGP Notice of Intent 35-45 Garvey Street Everett, Massachusetts	GEI Consultants	SURFACE WATER SAMPLE LOCATION
Greystar Development, LLC Everett, Massachusetts	Project 2100989	March 2022 Fig. 3

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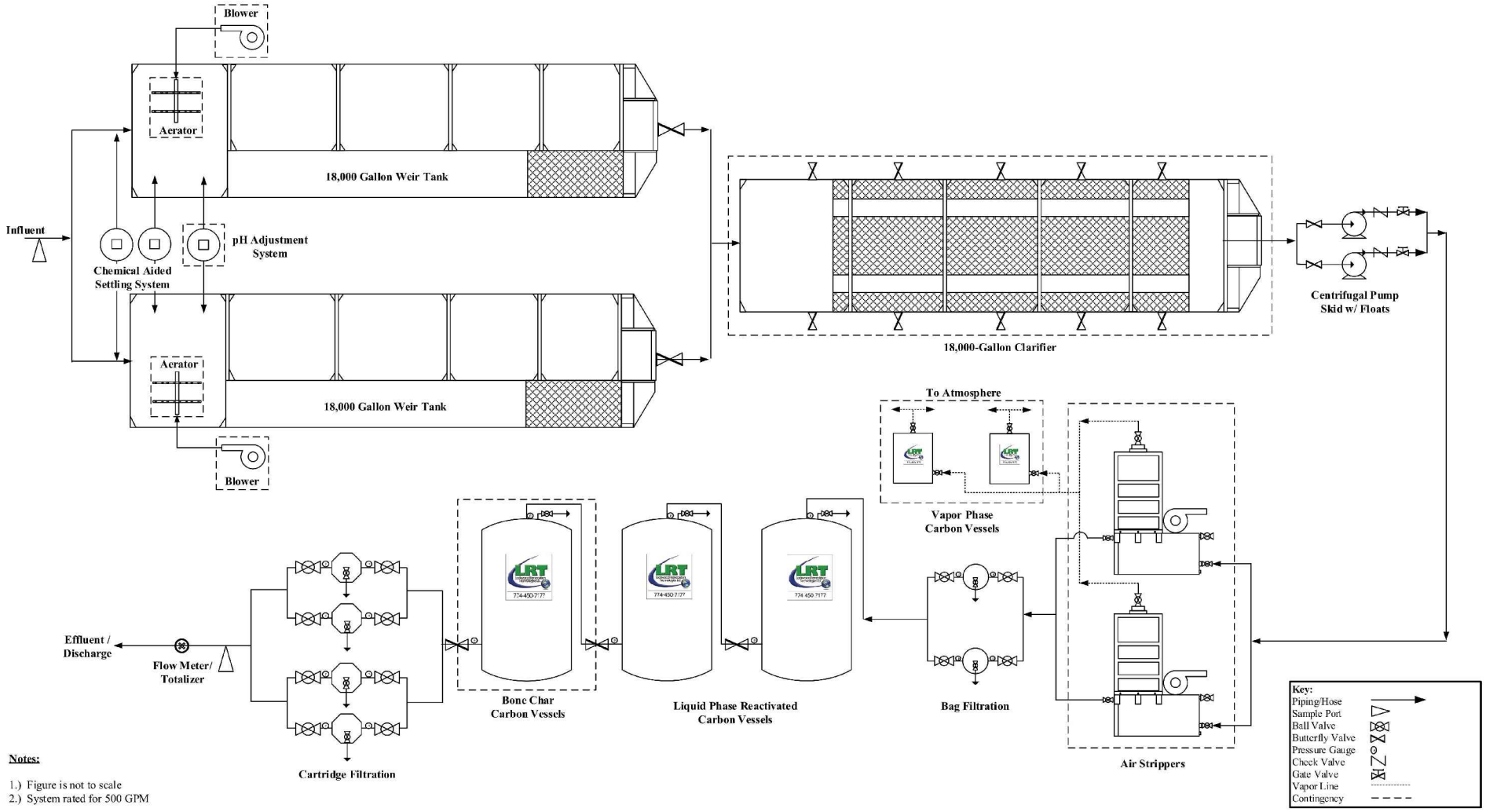

NOTES:

1. SCHEMATIC PROVIDED BY LOCKWOOD REMEDIATION TECHNOLOGIES, LLC.

NPDES RGP Notice of Intent 35-45 Garvey Street Everett, Massachusetts	GEI Consultants	PROCESS FLOW DIAGRAM
Greystar Development, LLC Everett, Massachusetts	Project 2100989	March 2022 Fig.4

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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:
35 Garvey Street</td><td colspan="3">Site address: 35 Garvey Street
Street:</td></tr>
<tr><td>City: Everett</td><td>State: MA</td><td>Zip: 02149</td></tr>
<tr><td rowspan="4">2. Site owner
GS Garvey Owner LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Chris Legocki</td></tr>
<tr><td colspan="2">Telephone: 617.947.2267</td><td>Email: chris.legocki@greystar.com</td></tr>
<tr><td colspan="3">Mailing address: One Federal Street
Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02110</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Lockwood Remediation Technologies, LLC</td><td colspan="3">Contact Person: Paul Lockwood</td></tr>
<tr><td colspan="2">Telephone: 774.450.7177 x101</td><td>Email: plockwood@lrt-llc.net</td></tr>
<tr><td colspan="3">Mailing address:
Street: 89 Crawford Street</td></tr>
<tr><td>City: Leominster</td><td>State: MA</td><td>Zip: 01453</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
TBD

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): 3-28681
☐ 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):
Unnamed waterbody to Mystic River	MA71-03	SB(CSO), Shellfishing

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.	NA
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.	0

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: 12/22/2021

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

C. Source water information:

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

■ Contaminated groundwater 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 current MassDEP disposal site for VOCs (3-28681)	
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): Unnamed receiving water to Mystic River	Outfall location(s): (Latitude, Longitude) 42°24'0.57"N 71° 3'14.07"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: 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): 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	100	3.05	2.41	Report mg/L	---
Chloride		✓	2	300.0	50000	8840	5005	Report µg/l	---
Total Residual Chlorine	✓		2	4500Cl D	20.0	< 20.0	0	0.2 mg/L	11
Total Suspended Solids		✓	2	2540D	50000	3500	3500	30 mg/L	---
Antimony	✓		2	200.7	25.0	<25.0	0	206 µg/L	640
Arsenic		✓	2	3113B/200	25.0	74.3	74.3	104 µg/L	10
Cadmium	✓		2	200.8/200.	5.0	<5.0	0	10.2 µg/L	4.7127
Chromium III		✓	2	200.7	10.0	157	157	323 µg/L	2028.2
Chromium VI	✓		2	3500Cr	10.0	<10.0	0	323 µg/L	11.4
Copper		✓	2	200.7	10.0	97.8	61.25	242 µg/L	251.8
Iron		✓	2	200.7	50.0	105000	53165	5,000 µg/L	1000
Lead		✓	2	200.8/200.	2.0	32.8	32.8	160 µg/L	431.26
Mercury	✓		2	245.1	0.2	< 0.2	0	0.739 µg/L	0.91
Nickel		✓	2	200.7	25.0	63	41.85	1,450 µg/L	1362.4
Selenium	✓		2	3113B/200	25.0	< 25.0	0	235.8 µg/L	5.0
Silver	✓		2	200.7	5.0	< 5.0	0	35.1 µg/L	2875.8
Zinc		✓	2	200.7	25.0	358	189.8	420 µg/L	3145.0
Cyanide		✓	2	4500CNC	50.0	389	389	178 mg/L	5.2
B. Non-Halogenated VOCs									
Total BTEX		✓	2	524.2	50	325	325	100 µg/L	---
Benzene		✓	2	524.2	0.5	11.7	11.7	5.0 µg/L	---
1,4 Dioxane		✓	2	8270DSIM	0.250	2.02	1.17	200 µg/L	---
Acetone	✓		2	524.2	5.0	< 5.0	0	7.97 mg/L	---
Phenol	✓		2	420.1	50	< 50	0	1,080 µg/L	300

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✓		2	524.2	0.3	< 0.3	0	4.4 µg/L	1.6
1,2 Dichlorobenzene		✓	2	524.2	0.5	0.8	0.8	600 µg/L	---
1,3 Dichlorobenzene	✓		2	524.2	0.5	< 0.5	0	320 µg/L	---
1,4 Dichlorobenzene	✓		2	524.2	0.5	< 0.5	0	5.0 µg/L	---
Total dichlorobenzene		✓	2	524.2	0.5	0.8	0.8	763 µg/L in NH	---
1,1 Dichloroethane		✓	2	524.2	0.5	6.1	6.1	70 µg/L	---
1,2 Dichloroethane		✓	2	524.2	0.5	2.2	2.2	5.0 µg/L	---
1,1 Dichloroethylene		✓	2	524.2	50	83	83	3.2 µg/L	---
Ethylene Dibromide	✓		2	504.1	0.015	< 0.015	0	0.05 µg/L	---
Methylene Chloride		✓	2	524.2	0.5	1.7	1.7	4.6 µg/L	---
1,1,1 Trichloroethane	✓		2	524.2	0.5	< 0.5	0	200 µg/L	---
1,1,2 Trichloroethane		✓	2	524.2	50	241	241	5.0 µg/L	---
Trichloroethylene		✓	2	524.2	5000	126000	126000	5.0 µg/L	---
Tetrachloroethylene		✓	2	524.2	0.5	4.6	4.6	5.0 µg/L	3.3
cis-1,2 Dichloroethylene		✓	2	524.2	5000	31200	31200	70 µg/L	---
Vinyl Chloride		✓	2	524.2	20	1210	1210	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✓		2	625.1 SIM	11.5	< 11.5	0	190 µg/L	--
Diethylhexyl phthalate	✓		2	625.1 SIM	11.5	< 11.5	0	101 µg/L	2.2
Total Group I PAHs	✓		2	625.1 SIM	0.23	<0.23	0	1.0 µg/L	---
Benzo(a)anthracene	✓		2	625.1 SIM	0.23	<0.23	0.	As Total PAHs	0.0038
Benzo(a)pyrene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038
Benzo(b)fluoranthene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038
Benzo(k)fluoranthene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038
Chrysene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038
Dibenzo(a,h)anthracene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038
Indeno(1,2,3-cd)pyrene	✓		2	625.1 SIM	0.23	<0.23	0		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	✓		2	625.1 SIM	0.92	<0.92	0	100 µg/L	---
Naphthalene	✓		2	625.1 SIM	0.92	< 0.92	0	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs		✓	2	608.3	0.11	<0.11	0	0.000064 µg/L	---
Pentachlorophenol	✓		2	625.1 SIM	4.14	<4.14	0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons		✓	2	1664A	5000	<5000	0	5.0 mg/L	---
Ethanol	✓		2	D3695	10000	10000	0	Report mg/L	---
Methyl-tert-Butyl Ether	✓		2	524.2	0.5	<0.5	0	70 µg/L	20
tert-Butyl Alcohol	✓		2	524.2	25	<25.0	0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✓		2	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	✓		2	NA	NA	6.7 S.U	6.7 S.U.		
Temp		✓	2	NA	NA	62.6 deg F	59.27 deg F		
Hardness		✓	2	200.7	41200	4730000	2547500		

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:

Base water treatment system includes chemical aided settling, bag/cartridge filtration and carbon treatment. Contingency treatment items include pH adjustment, aeration, air strippers with vapor-phase carbon treatment and bone char carbon treatment.

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 tank, bag filter, liquid phase reactivated carbon and cartridge filtrations. Additional treatment may included aerators, air strippers with vapor phase carbon, and bone meet effluent requirements. See attached Figure 4.

Identify each major treatment component (check any that apply):

■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter

■ Chemical feed tank ■ Air stripping unit ■ Bag filter ■ Other; if so, specify: Granulated activated carbon, 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: Media vessels and weir tanks Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	500
Provide the proposed maximum effluent flow in gpm.	500
Provide the average effluent flow in gpm.	250
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:

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

Sodium Hydroxide Solution 10% to 50%, Redux E50 and FOC ND-9911. Additional information is included in the narrative.

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.

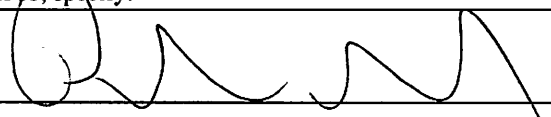
See attached letter report prepared by GEI.

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: 3/9/2022
Print Name and Title: PAUL LOCKWOOD PRESIDENT LOCKWOOD REMEDIATION TECHNOLOGIES, LLC	

How's My Waterway?

Informing the conversation about your waters.

Waterbody Report

Mystic River

Assessment Unit ID: MA71-03

Waterbody Condition: Impaired

Existing Plans for Restoration: No

303(d) Listed: Yes

Year Reported: 2016

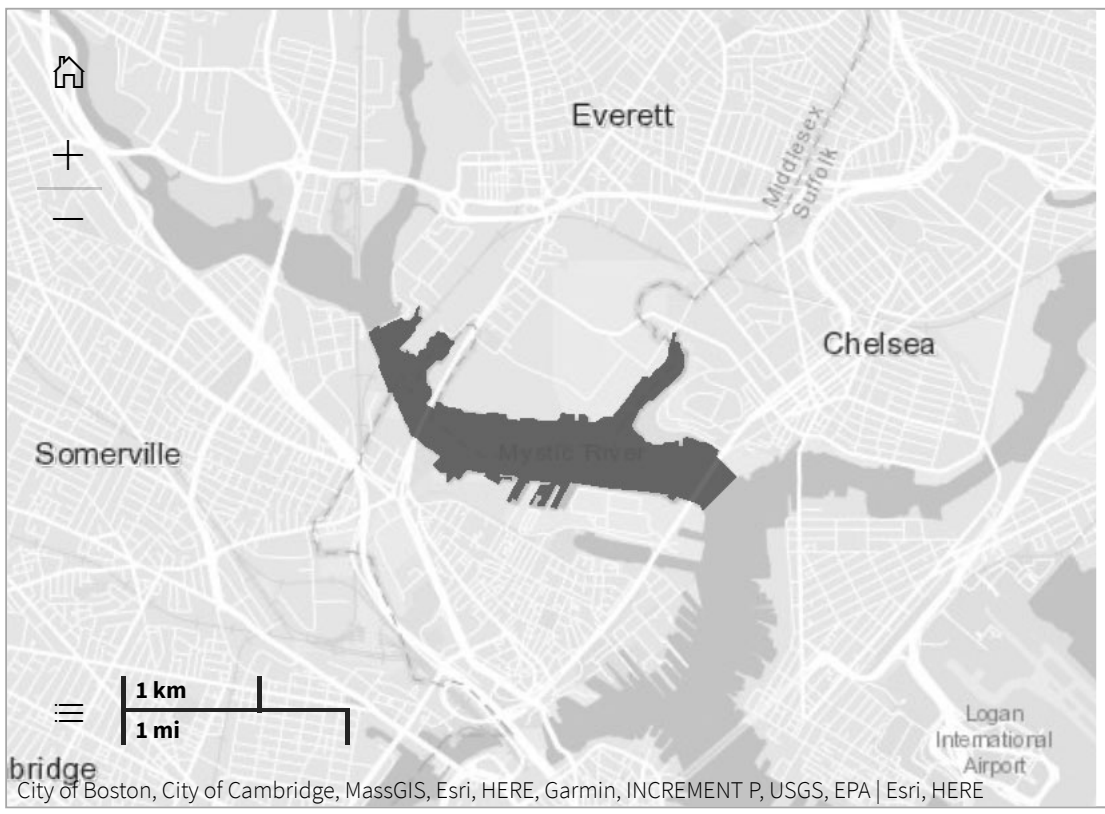
Organization Name (ID): Massachusetts (MA_DEP)

What type of water is this?

Estuary (0.49 Square Miles)

Where is this water located?

Amelia Earhart Dam, Somerville/Everett to confluence with Boston Inner Harbor, Chelsea/Charlestown (Includes Island End River).



Assessment Information from 2016

What is this water used for?

Expand All

Aesthetic — Impaired

Impairments Evaluated

Impairment	Plan in Place
Flocculant Masses	No
Odor	No
Oil and Grease	No

Scum/foam	No
Impairment	**Plan in Place**

Other Parameters Evaluated

No other parameters evaluated for this use.

Fish Consumption

Impaired

Impairments Evaluated

Impairment	Plan in Place
Cause Unknown	No
Pcbs in Fish Tissue	No

Other Parameters Evaluated

No other parameters evaluated for this use.

Fish, Other Aquatic Life and Wildlife

Impaired

Impairments Evaluated

Impairment	Plan in Place
Ammonia, Un-Ionized	No
Cause Unknown	No
Dissolved Oxygen	No
Petroleum Hydrocarbons	No

Other Parameters Evaluated

No other parameters evaluated for this use.

Primary Contact Recreation

Impaired

Impairments Evaluated

Impairment	Plan in Place
Flocculant Masses	No
Odor	No
Oil and Grease	No
Scum/foam	No

Other Parameters Evaluated

No other parameters evaluated for this use.

Secondary Contact Recreation

Impaired

Impairments Evaluated

Impairment	Plan in Place
Flocculant Masses	No
Odor	No
Oil and Grease	No
Scum/foam	No

Other Parameters Evaluated

No other parameters evaluated for this use.

Shellfish Harvesting Impaired

Impairments Evaluated

Impairment	Plan in Place
Fecal Coliform	No

Other Parameters Evaluated

No other parameters evaluated for this use.

Probable sources contributing to impairment from 2016:

Source	Confirmed
Contaminated Sediments	Yes
Source Unknown	No

Plans to Restore Water Quality

What plans are in place to protect or restore water quality?

Links below open in a new browser tab.

Plan	Impairments	Type	Date
Mystic River Watershed Alternative Tmdl	Dissolved Oxygen, Phosphorus, Total	Alternative Restoration Approach	2020-08-28
Pathogen Tmdl for Boston Harbor, Weymouth-Weir, and Mystic Watersheds	Enterococcus, Fecal Coliform	TMDL	2018-10-09

Table A1. Water Quality Assessment Status for Reporting Year 2016
Mystic 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

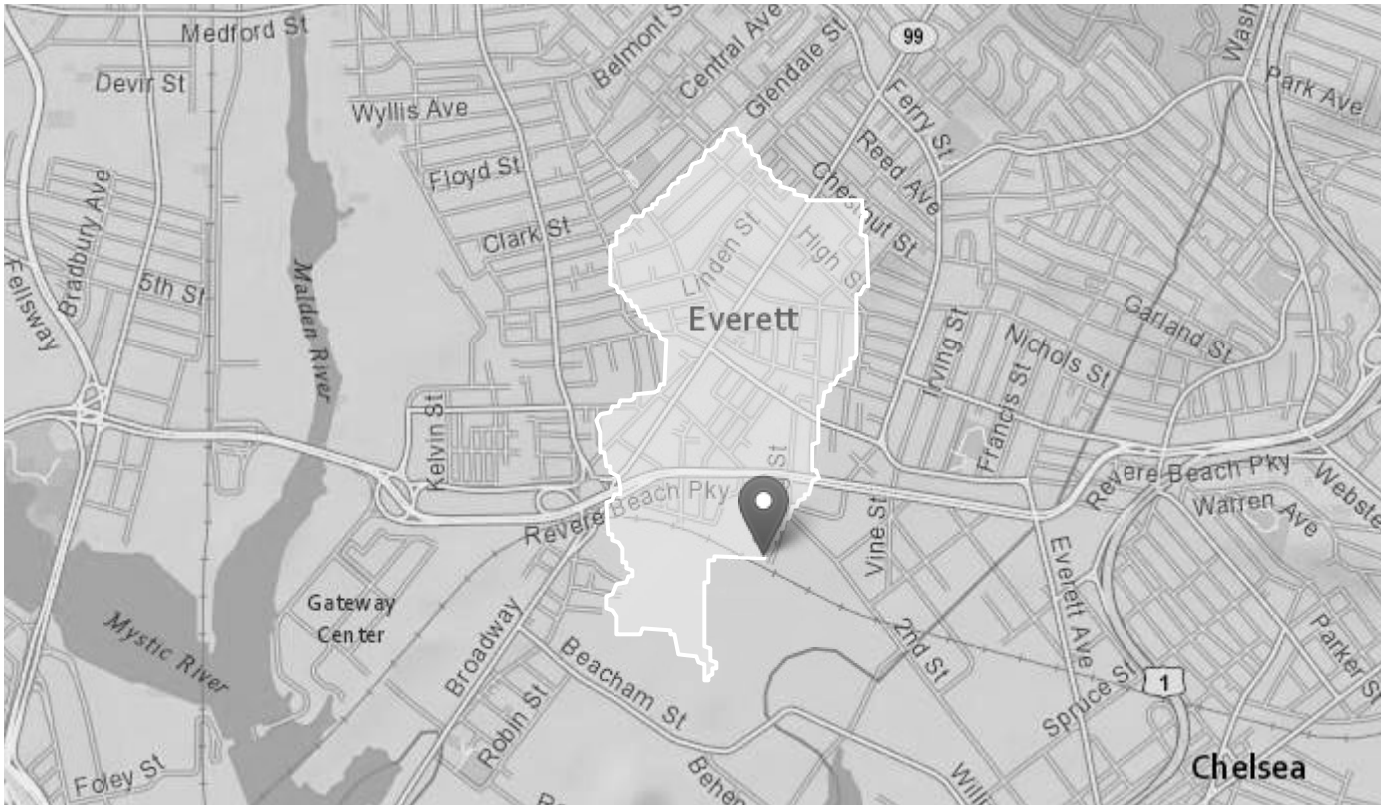
Cause of Impairment	Cause of Impairment Group	Designated Use(s)	State TMDL Development Status
Ammonia, Un-ionized	Ammonia	Fish, Other Aquatic Life And Wildlife	TMDL needed
Cause Unknown (Contaminants in Fish and/or Shellfish	Cause Unknown - Impaired Biota	Fish, Other Aquatic Life And Wildlife	TMDL needed
Dissolved Oxygen	Organic Enrichment/Oxygen Depletion	Fish, Other Aquatic Life And Wildlife	TMDL needed
Fecal Coliform	Pathogens	Shellfish Harvesting	TMDL needed
Flocculant Masses	Other Cause	Aesthetic, Primary Cotact Recreation, Secondary Contact Re	TMDL needed
Odor	Taste, Color, Odor	Aesthetic, Primary Cotact Recreation, Secondary Contact Re	TMDL needed
Oil and Grease	Oil and Grease	Aesthetic, Primary Cotact Recreation, Secondary Contact Re	TMDL needed
PCBs in Fish Tissue	Algal Growth	Fish Consumption	TMDL needed
Petroleum Hydrocarbons	Oil and Grease	Fish, Other Aquatic Life And Wildlife	TMDL needed
Scum/Foam	Other Cause	Aesthetic, Primary Cotact Recreation, Secondary Contact Re	TMDL needed

Sources:

1. Information obtained from EPA website: https://mywaterway.epa.gov/ on January 6, 2022.
2. Massachusetts Year 2016 Integrated List of Waters, Massachusetts Division of Watershed Management Watershed Planning Program, June 2017.

StreamStats Report

Region ID: MA
Workspace ID: MA20211220234033112000
Clicked Point (Latitude, Longitude): 42.40045, -71.05319
Time: 2021-12-20 18:40:51 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.42	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.015	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	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	0.42	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.015	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

Statistic	Value	Unit

Low-Flow Statistics Citations

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

Farr, Julia

From: Greer, Molly
Sent: Wednesday, December 22, 2021 3:55 PM
To: Farr, Julia
Subject: FW: No 7Q10 for receiving water

GEI
MOLLY GREER
Project Geologist
781.721.4000 cell: 510.421.2003
400 Unicorn Park Drive, Woburn, MA 01801

From: Ruan, Xiaodan (DEP) <xiaodan.ruan@state.ma.us>
Sent: Wednesday, December 22, 2021 2:30 PM
To: Greer, Molly <mgreer@geiconsultants.com>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>
Subject: [EXT] RE: No 7Q10 for receiving water

EXTERNAL EMAIL

Hi Molly,

I checked the Google map, and it looks like the unnamed waterbody is very small (maybe a manmade channel?) and most likely is stormwater dominant. The StreamStats cannot calculate a 7Q10 because there is not enough flow. Therefore, no dilution will be allowed (or dilution factor is 0) for the receiving water for the proposed discharge from the project at 35 Garvey Street, Everett, MA.

Here is water quality information to assist you with filling out the NOI:

> Waterbody and ID: Unnamed waterbody to Mystic River (MA71-03) in the Boston Harbor: Mystic River Watershed
> Classification: SB (CSO), Shellfishing
> Outstanding Resource Water?: No
> State's most recent Integrated List is located here: https://www.epa.gov/sites/production/files/2020-01/documents/2016-ma-303d-list-report.pdf, search for "MA71-03" to see the causes of impairments.
> TMDLs: There is no approved TMDL for this segment.

If this is not a current MCP site, then in addition to submitting the NOI to EPA, you need to apply with MassDEP and submit a $500 fee (unless fee exempt, e.g., municipality) using ePLACE. Instructions on how to apply are located here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent and information on how to get ePLACE technical assistance is available on the ePLACE Portal webpage: https://eplace.eea.mass.gov/citizenaccess/.

Please let me know if you have any questions.

Thanks,

Xiaodan

Xiaodan Ruan
Environmental Engineer
Massachusetts Department of Environmental Protection
One Winter Street, Boston, MA 02108
(857)-256-4172
xiaodan.ruan@mass.gov

From: Greer, Molly <mgreer@geiconsultants.com>
Sent: Monday, December 20, 2021 6:52 PM
To: Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>; Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>
Subject: No 7Q10 for receiving water

Hi Xiaodan,

I am preparing an RGP NOI for an upcoming construction project in Everett, MA at 35 Garvey Street. Dewatering effluent will be discharged to the City of Everett stormwater system which discharges into an unnamed body of water south of Spring Street and MBTA railroad tracks. This is the location where we collected our receiving water sample for the RGP.

In SteamStats we could select and generate a basin but no low flow statistics (see attached), since we get an error for the Stratified Drift per Stream Length parameter. Do you know what the issue is?

Is there another way we can calculate flow (7Q10) into the receiving water and a dilution factor for the RGP Permit?

Thank you,
Molly Greer

GEI
MOLLY GREER
Project Geologist
781.721.4000 cell: 510.421.2003
400 Unicorn Park Drive, Woburn, MA 01801

Dilution Factor	1.0					
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	**11**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	104	µg/L	**10**	µg/L		
Cadmium	**10.2**	µg/L	4.7127	µg/L		
Chromium III	**323**	µg/L	2028.2	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	251.8	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	431.26	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	1362.4	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	2875.8	µg/L		
Zinc	**420**	µg/L	3145.0	µg/L		
Cyanide	178	mg/L	**5.2**	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	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	1.6	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	**3.3**	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	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	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	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Dilution Factor	0.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
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Zinc	420	µg/L	**86**	µg/L		
Cyanide	178	mg/L	**1.0**	µg/L	5	µg/L
B. Non-Halogenated VOCs						
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Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
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Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
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Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
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Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

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

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

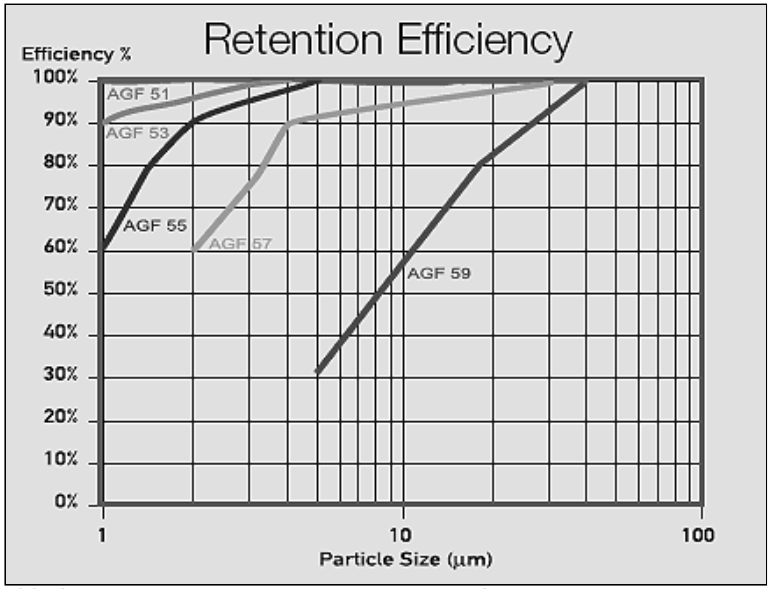
OPERATIONALCONSIDERATIONS

Bag Positioner

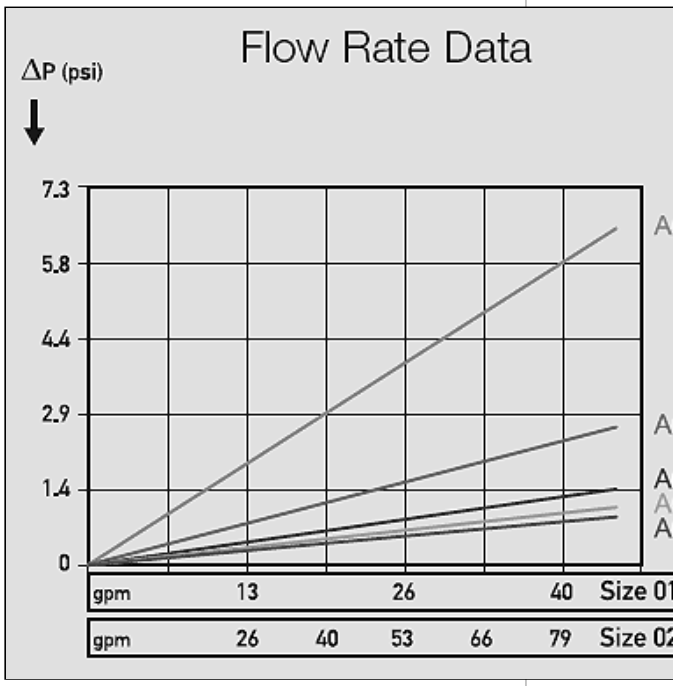
ACCUGAF filter bags must be used with the Eaton bagpositioner. This eases insertion and assures correct alignment of the filter bag inside the restrainer basket. In addition, the be protected against damage to inadvertent back-flow.

Pre-Wetting in Aqueous Solutions

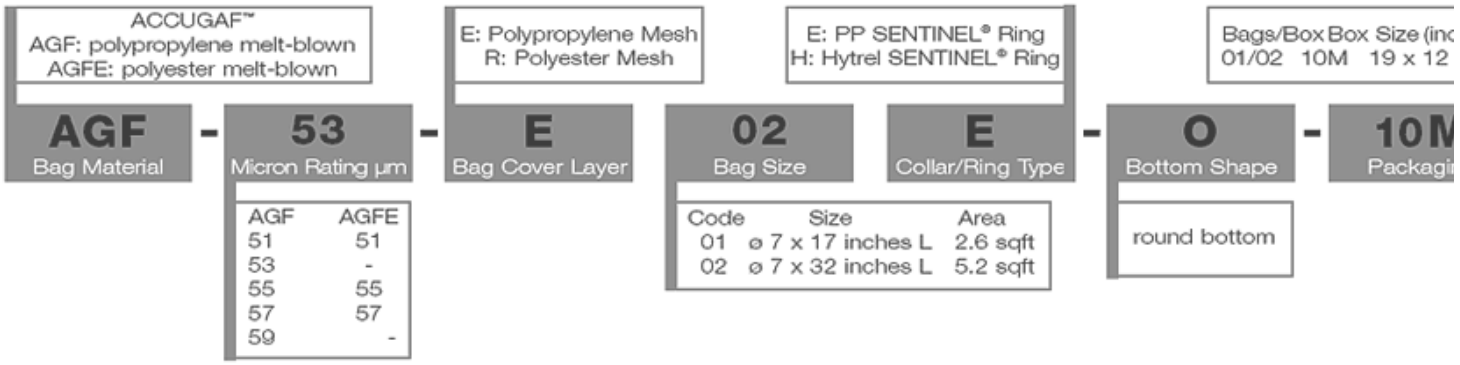
ACCUGAF polypropylene filter bags are fabricated from microfiber filtration media. These materials are hydro-phobic, indicating that water will not wet the fiber surfaces.As will a polypropylene filters, a lower surface tension fluid (wetting agent) must be used to wet the media prior to introducing 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

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- Clarifiers
- Controls
- Dissolved Air Flotation
- 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
Accugaf Filter Bags | Duragaf Filter Bags | Hayflow Filter Element | Lofclear Filter Bags | Nylon & Polyester Mesh | Progaf Filter Bags | Sentinel® Filter Bags & Seal | Snap Ring Filter Bags | Filtration Media Overview

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.

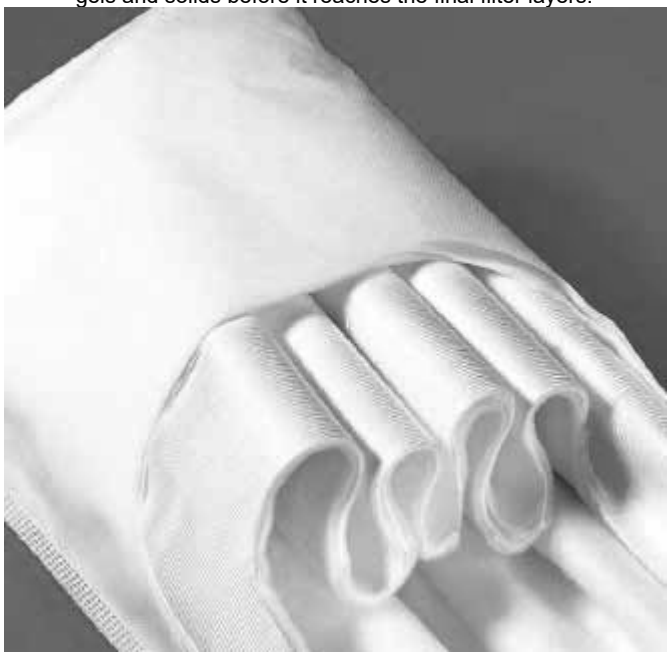
LOFCLEAR™ Filter Bag Filtration Ratings

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.

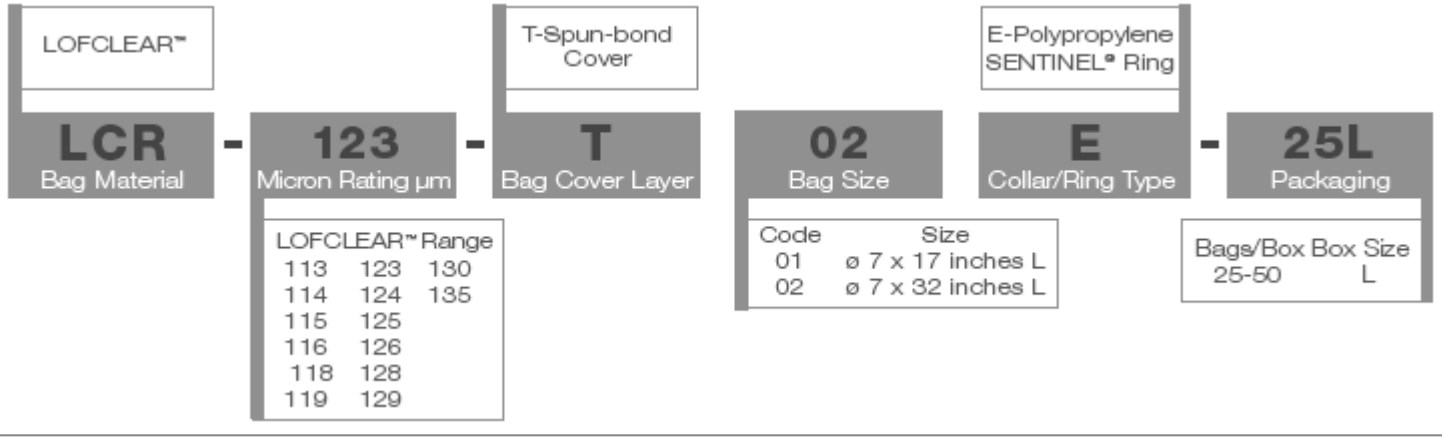
LOFCLEAR Series 500 Filter Bags are available in four different efficiency ratings so you can choose your exact required filtration efficiency. LOFCLEAR Filter Bags have filtration efficiencies from 95 to 99%, with a dirt holding capacity of over 2 pounds.

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.

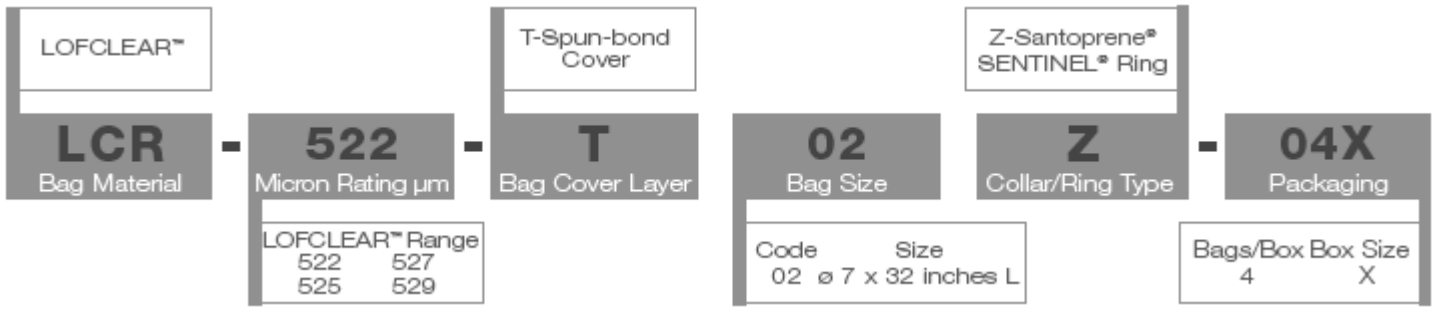
Operational Considerations

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 FILTER PRODUCT CODE EXPLANATION



LOFCLEAR 500 SERIES BAG FILTER 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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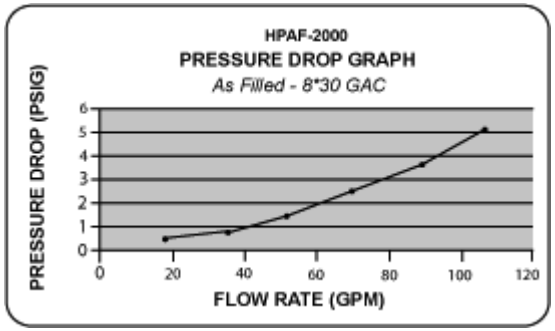
- Microbial Bacteria
- Oil/Water Separators
- Ozone
- Pressure Filtration
- Screens
- Separators/Strainers

Liquid Phase Vessels > HPAF 2000

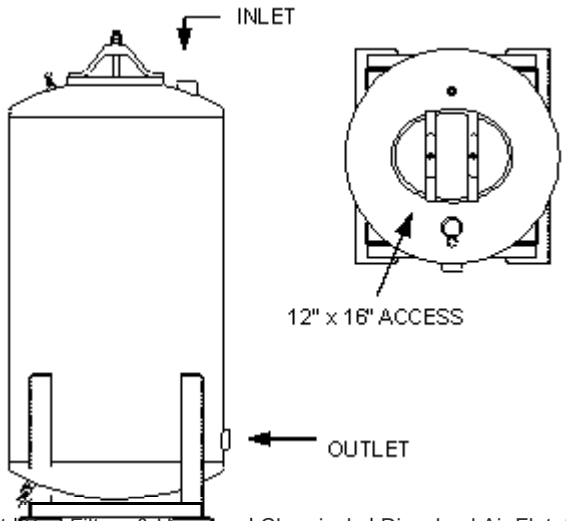
General Description
The HPAF-2000 filter is a media filter vessel designed to treat liquid streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. Some applications include:

- 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 Vessels, 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

GENERAL CARBON CORP.

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

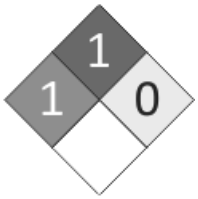
No additional information available

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.***

RESINTECH CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

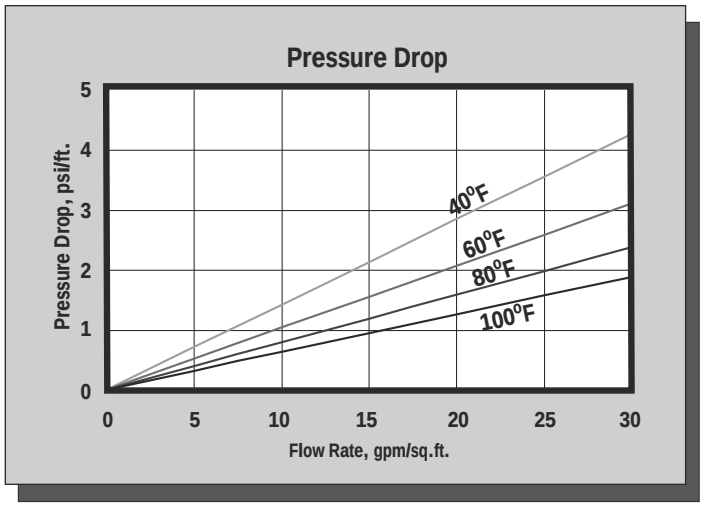
RESINTECH CGS is a high purity, light colored, high capacity, gel type sulfonated polystyrene cation resin supplied in the sodium form as moist, tough uniform spherical beads. *ResinTech CGS* specifically is intended for use in all water softening applications,including beverages, potable water and water 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

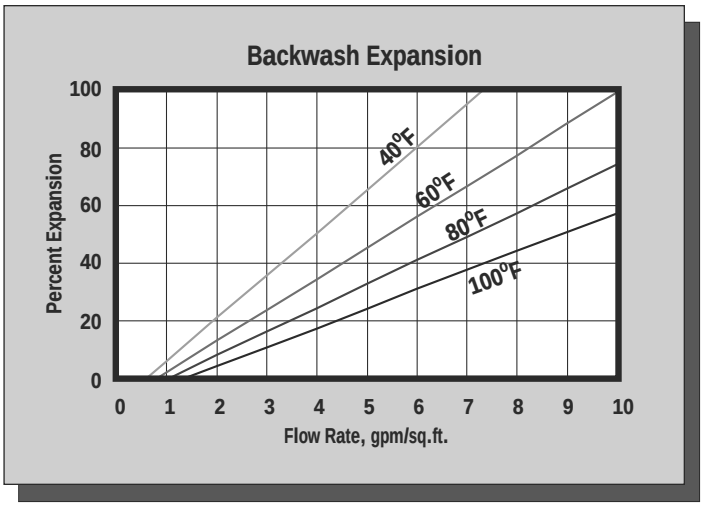
- **COMPLIES WITH FDA REGULATIONS FOR POTABLE WATER APPLICATIONS**
  Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the F.D.A.*
- **EXCELLENT REGENERATION EFFICIENCY**
  Virtually the same operating capacity as premium grade *ResinTech CG8-BL*
- **NSF/ANSI-61 VALIDATED**
- **UNIFORM 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

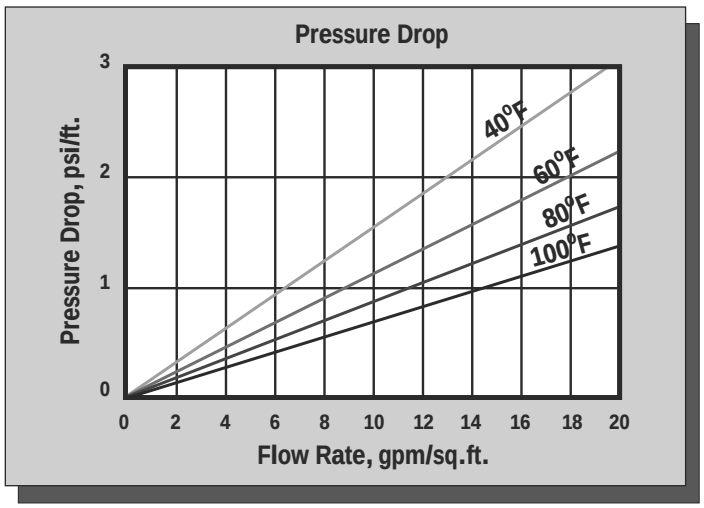
RESINTECH SBG1 is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *RESINTECH SBG1* is intended for use in all types of deionization systems and chemical processing applications. 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.

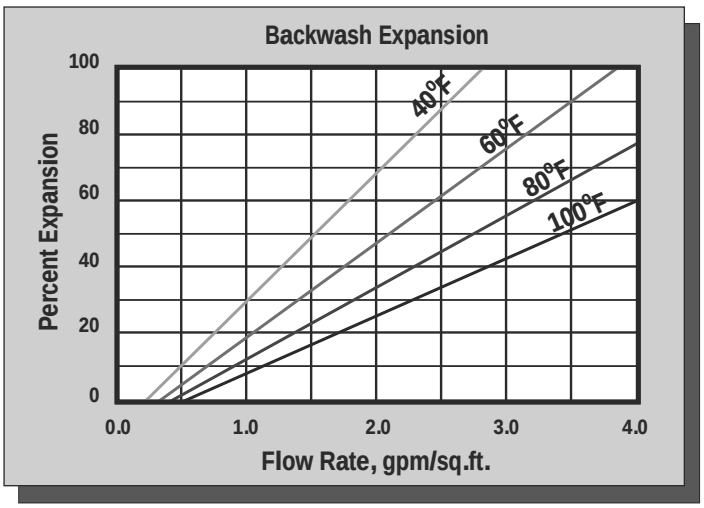
FEATURES & BENEFITS

- **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/ft³	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.

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

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

Features

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

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Operating Benefits

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

Aftermarket

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

Series HV

Specifications and Model Selection

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

Engineering Data

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

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

Engineering Data

Reproducibility:	+/- 2% at maximum capacity
Viscosity Max CPS:	20,000 CPS
Stroke Frequency Max SPM:	125
Stroke Frequency Turn-Down Ratio:	10:1
Stroke Length Turn-Down Ratio:	10:1
Power Input:	115 VAC/50-60 HZ/1 ph
	230 VAC/50-60 HZ/1 ph
Average Current Draw:	
@ 115 VAC; Amps:	1.0 Amps
@ 230 VAC; Amps:	0.5 Amps @ 230 VAC
Peak Input Power:	300 Watts
Average Input Power @ Max SPM:	130 Watts

Custom Engineered Designs – Pre-Engineered Systems

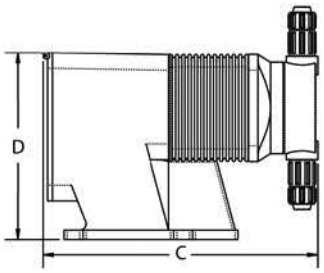
Pre-Engineered Systems

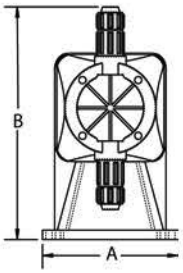
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key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

Dimensions

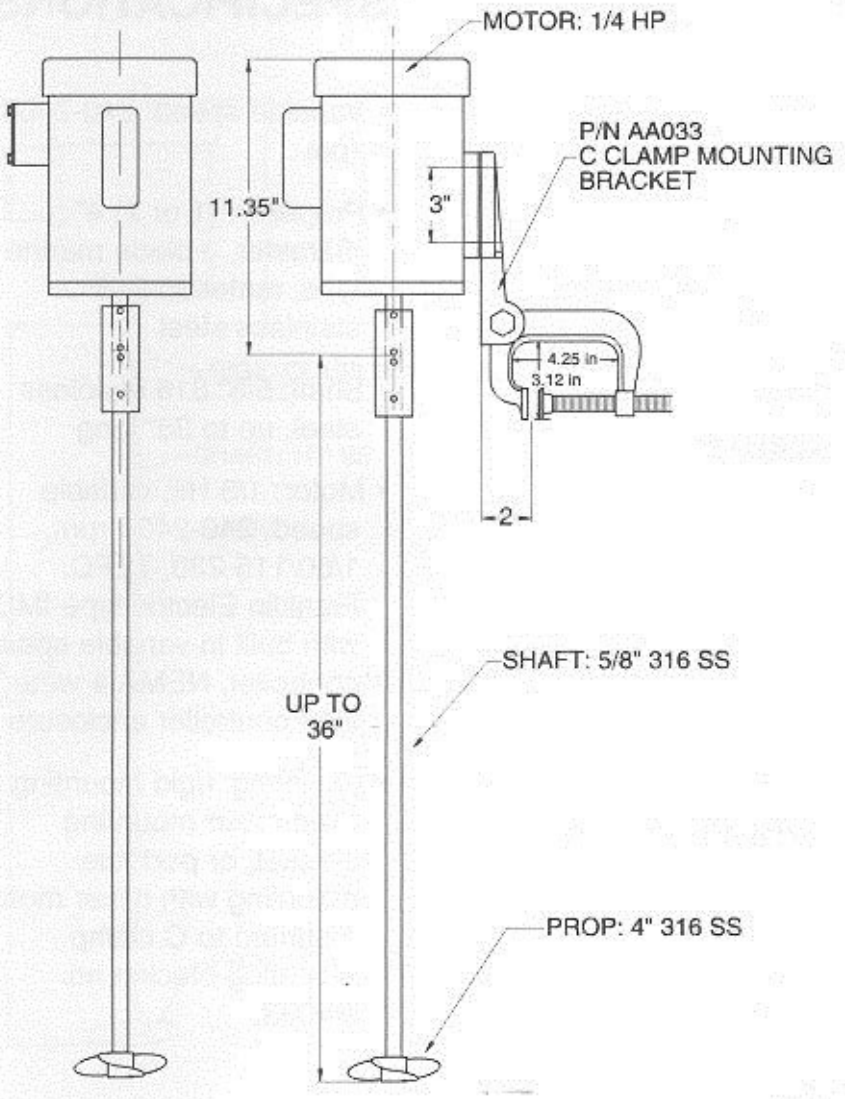
Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

NOTE: Inches X 2.54 = cm





MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

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

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

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

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

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

Precautionary Statements - Response

Absorb spillage to prevent material damage.

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

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

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

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

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

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

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

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

Acute Toxicity

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

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

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

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

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

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

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

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

SECTION 15) REGULATORY INFORMATION

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

SECTION 16) OTHER INFORMATION

Glossary

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

Additional Information

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

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

DISCLAIMER

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

SAFETY DATA SHEET

Revision date 2019-27-9

Revision number 2

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

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

SECTION 2) HAZARDS IDENTIFICATION

Classification

Eye Irritation - Category 2

Skin Irritation - Category 3

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes mild skin irritation

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

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

Precautionary Statements - Response

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

If eye irritation persists: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

Precautionary Statements - Storage

No precautionary statement available.

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

Substances/Mixtures

Chemical nature: Anionic Polyacrylamide

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

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

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

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	5.85 lb/gal
Specific Gravity	0.65 - 0.85

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

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation, ingestion, skin absorption.

Acute Toxicity

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

Carcinogenicity

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

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes mild skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity effects

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

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

Mobility in Soil

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

Persistence and degradability

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

Not Readily Biodegradable.

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

Bioaccumulative potential

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

Partion coefficient

N-octanol/water: Not applicable

Other adverse effects

This material is not classified as dangerous for the environment .

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

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

DOT Shipping Designation:

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

SECTION 15) REGULATORY INFORMATION

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

SECTION 16) OTHER INFORMATION

Glossary

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

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

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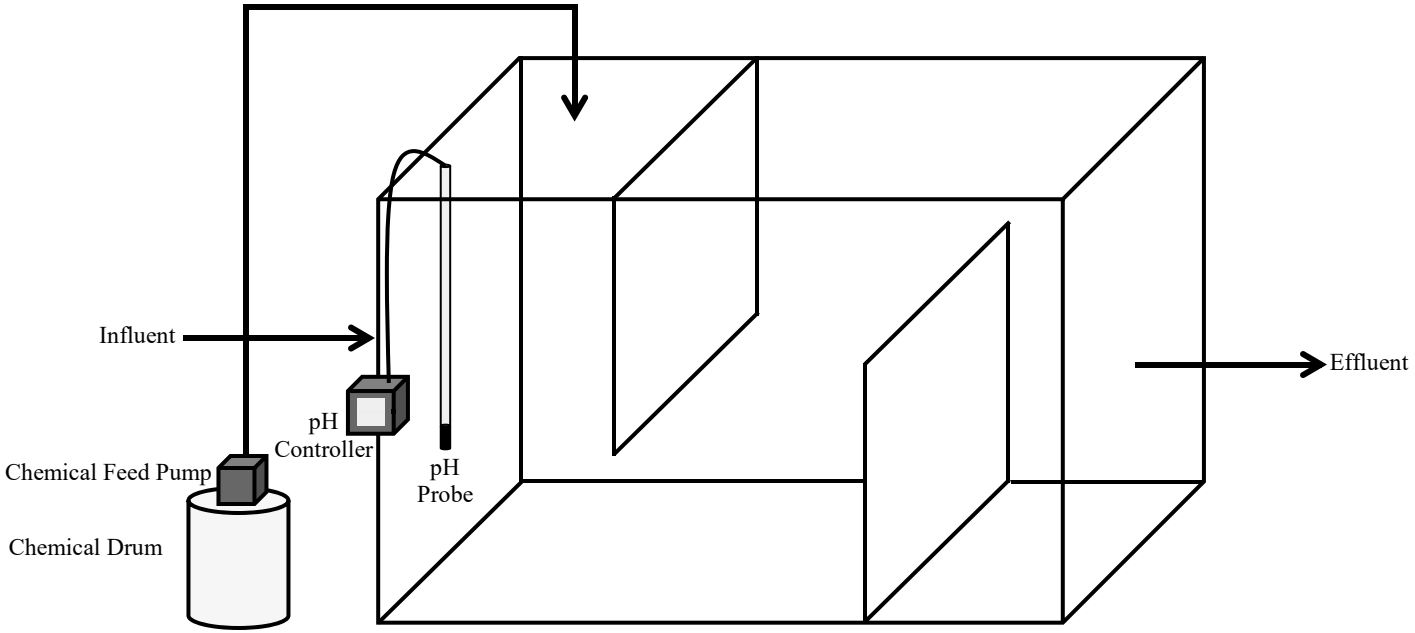


Notes:

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

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

Configuration of pH Adjustment System

Lockwood Remediation Technologies, LLC

One Controller for the Broadest Range of Sensors.

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

Maximum Versatility

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

Ease of Use and Confidence in Results

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

Wide Variety of Communication Options

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

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

Controller Comparison

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

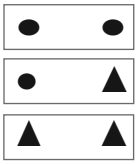
Choose from Hach's Broad Range of Digital and Analog Sensors

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

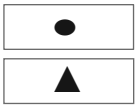
● = Digital ▲ = Analog

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

2 Channel Configurations



1 Channel Configurations



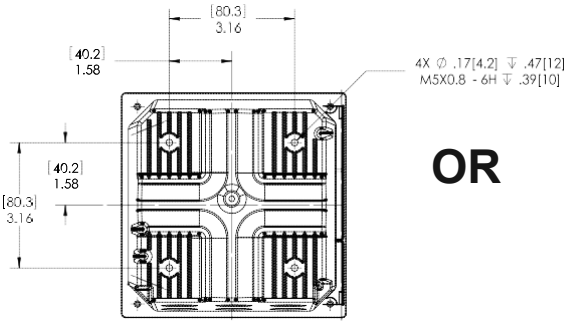
Specifications*

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

**Subject to change without notice.*

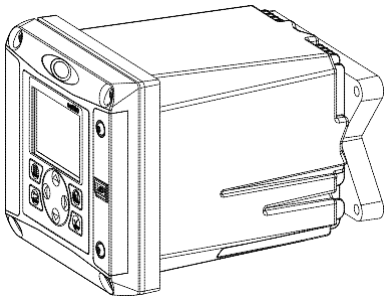
Dimensions

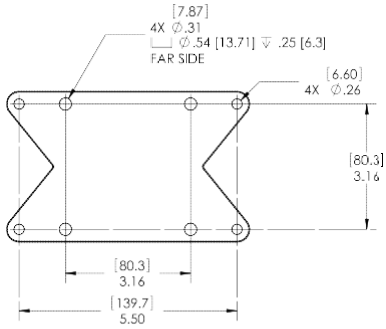
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

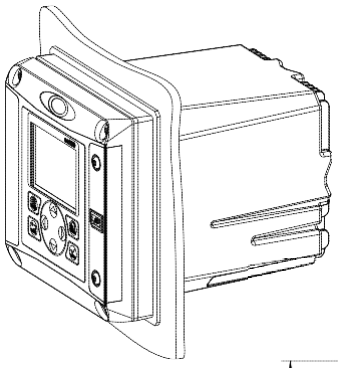
OR

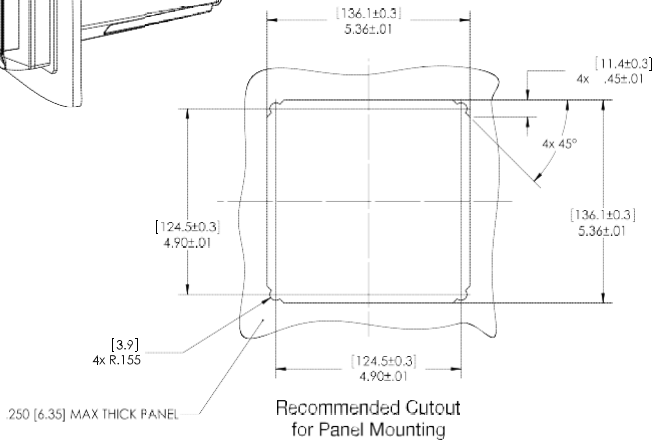




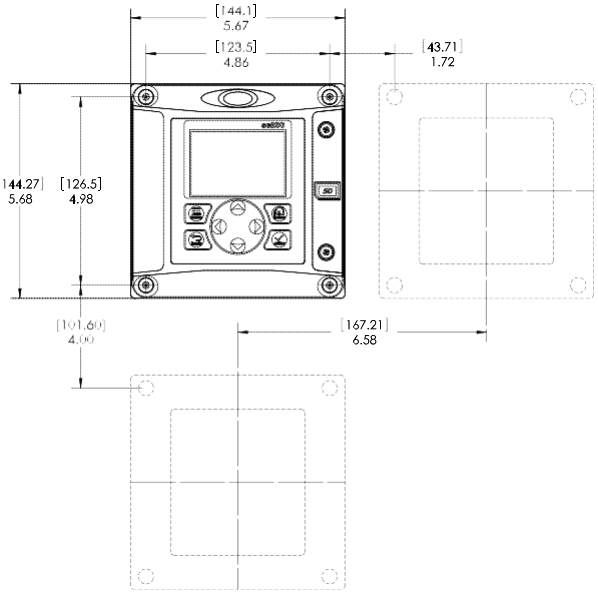
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



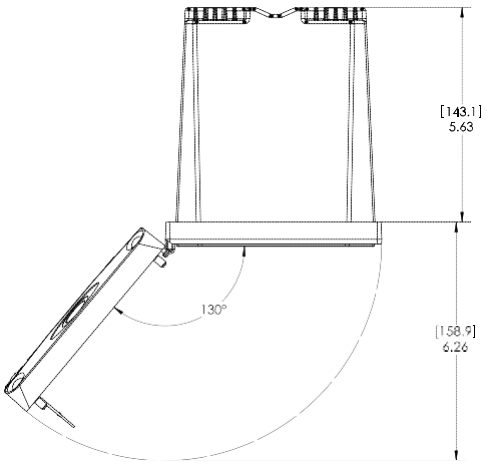


Recommended Cutout
for Panel Mounting

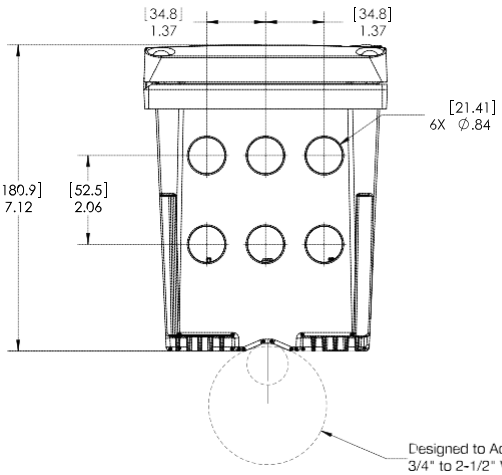


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views

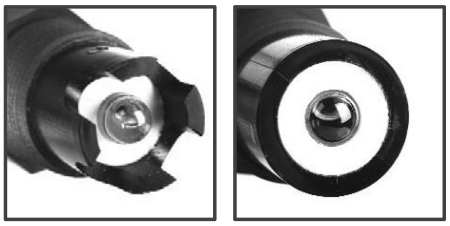


Door Opening Details



3/4-inch Combination pH and ORP Sensor Kits

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



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

Features and Benefits

Low Price—High Performance

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

Special Electrode Configurations

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

Temperature Compensation Element Option

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

Versatile Mounting Styles

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

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

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

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

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

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

Specifications*

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

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

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

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

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

Warranty
90 days

**Specifications subject to change without notice.*

Engineering Specifications

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

Dimensions

Convertible Style Sensor

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

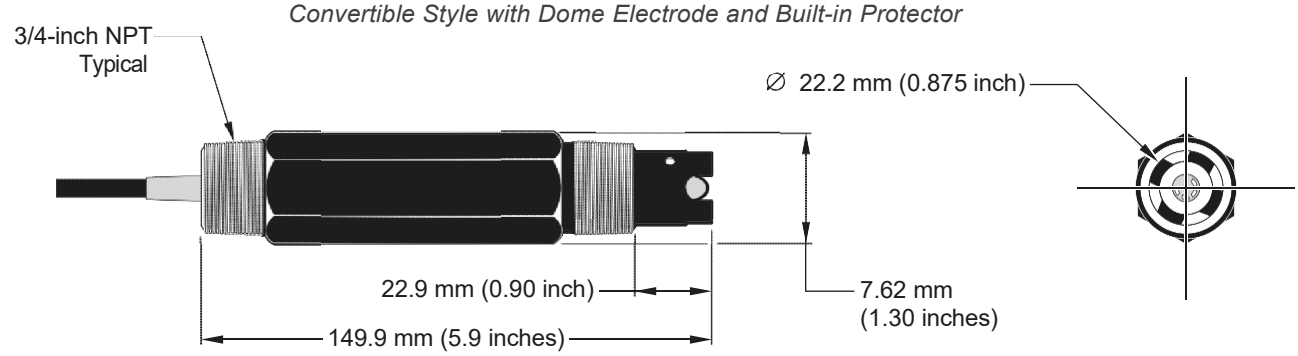
Insertion Style Sensor

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

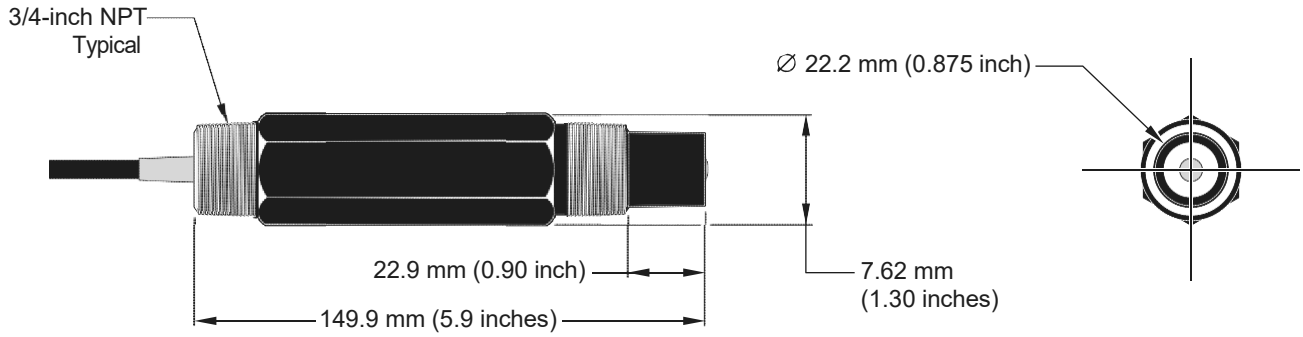
Sanitary Style Sensor

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

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



Lockwood Remediation Technologies, LLC

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

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

Features

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

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

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

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

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

Operating Benefits

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

Aftermarket

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

Series A Plus
Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <; N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1 14' ID X 3 8' OD						3 8' D X 1 2' OD	1 4' D X 3 8' OD		
		Pioina	1 4' FNPT									
Strokes/Minute		SPM	125							250		

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

Engineering Data

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

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

Engineering Data

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

Custom Engineered Designs - Pre-Engineered Systems

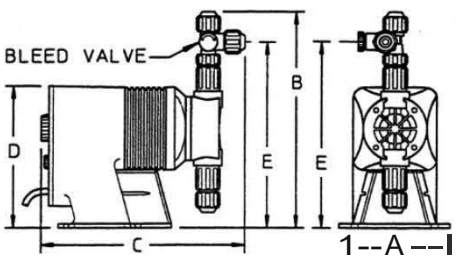
Pre-Engineered Systems

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

Dimensions

Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02 IS2	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03 IS3	5.0	9.9	9.5	6.5	8.5	10
LB0&4	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 cm



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

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

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

A95OVER Specifications

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

Metric Equivalent Specifications

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

A95OVER Technical Information

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

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

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

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

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SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Sodium Hydroxide Solution 10% to 50%**

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

: Chemical intermediate.;Reagent
Use pattern: Professional Use Only
Recommended restrictions: No restrictions on use known.

Chemical family : Inorganic acid

Name, address, and telephone number of the supplier:

Borden & Remington Corp

63 Water St.
PO Box 2573
Fall River, MA, USA
02722

Supplier's Telephone # : 508-675-0096

Name, address, and telephone number of the manufacturer:

Refer to supplier

24 Hr. Emergency Tel # : Chemtrec: 1-800-424-9300 (Within Continental U.S.); 703-527-3887.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear, colorless liquid.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:

Corrosive to Metals - Category 1
Skin Corrosion/Irritation - Category 1
Eye Damage/Irritation - Category 1
Specific Target Organ Toxicity, Single Exposure -Category 3 (respiratory)

Label elements

Hazard pictogram(s)

Signal Word

DANGER!

Hazard statement(s)

May be corrosive to metals.
Causes severe skin burns and eye damage.
May cause respiratory irritation.

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Precautionary statement(s)

Keep only in original container.
Do not breathe mist.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/clothing and eye/face protection.

If swallowed: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
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.
Absorb spillage to prevent material damage.

Store in corrosive resistant container with a resistant inner liner.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Dispose of contents/container in accordance with local regulation.

Other hazards

Other hazards which do not result in classification:
Contact with most metals will generate flammable hydrogen gas. Contact with water gives off heat. Burning produces obnoxious and toxic fumes. Chronic skin contact with low concentrations may cause dermatitis.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance;solution

Chemical name	Common name and synonyms	CAS #	Concentration
sodium hydroxide	Caustic soda Sodium hydrate soda lye	1310-73-2	**10.0 - 50.0**
Water	H2O	7732-18-5	**Balance**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Seek immediate medical attention/advice.

Inhalation : Immediately remove person to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Seek immediate medical attention/advice.

Skin contact : Wear appropriate protective equipment. Remove/Take off immediately all contaminated clothing. Immediately flush skin with gently flowing, running water for at least 20 minutes. Do not rub area of contact. Obtain medical attention immediately. Wash contaminated clothing before reuse. Contaminated leather may require disposal.

Eye contact : Wear appropriate protective equipment. Protect unharmed eye. If in contact with eyes, immediately flush eyes with running water for at least 20 minutes. If contact lens is present, DO NOT delay flushing or attempt to remove the lens until flushing is done. Obtain medical attention immediately.

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Most important symptoms and effects, both acute and delayed

: Causes severe skin irritation. Symptoms may include redness, blistering, pain and swelling. Causes serious eye damage. Symptoms may include severe pain, blurred vision, redness and corrosive damage. May cause respiratory irritation. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Ingestion may cause severe burns to the mucous membranes of the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations and bleeding.

Indication of any immediate medical attention and special treatment needed

: Immediate medical attention is required. Causes chemical burns. Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical. May react with water. Use water spray with caution.

Unsuitable extinguishing media

: Use water spray with caution. Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability

: Not considered flammable. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

: Not flammable.

Hazardous combustion products

: Sodium oxides.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Special fire-fighting procedures

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Use water to cool fire-exposed containers. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply or any natural waterway. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

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: Remove all sources of ignition. Ventilate area of release. Stop the spill at source if it is safe to do so. Dike for water control. Dilute acid with water and neutralize with Sodium Carbonate (soda ash) or lime. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required.

Special spill response procedures

: If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).
US CERCLA Reportable quantity (RQ): sodium hydroxide (1000 lbs / 454 kg).

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Wear protective gloves/clothing and eye/face protection. Use only in well-ventilated areas. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment. Do not breathe fumes or mists. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep away from heat and flame. Keep away from incompatibles. May react with water, generating heat. When diluting, always add the product to water. Never add water to the product. When mixing with water, stir small amounts in slowly. Use cold water to prevent excessive heat generation. The addition of caustic soda to liquid will cause a rise in temperature. Keep containers tightly closed when not in use. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

Conditions for safe storage : Store in a well-ventilated place. Keep container tightly closed. Store locked up. Keep away from incompatibles.Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Do not freeze. Store in corrosion-resistant containers. Avoid contact with aluminum.

Incompatible materials : Acids; Water; Metals (e.g. tin, aluminum, zinc and alloys containing these metals); Halogenated compounds; Nitrogen compounds.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
sodium hydroxide	2 mg/m³ (Ceiling)	N/Av	2 mg/m³	N/Av
Water	N/Av	N/Av	N/Av	N/Av

Exposure controls

Ventilation and engineering measures

: Use only in well-ventilated areas. Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection : Respiratory protection is required if the concentrations exceed the TLV. NIOSH-approved respirators are recommended. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Seek advice from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

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Skin protection	:	Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers. Wear as appropriate: Neoprene; Polyvinylchloride; Viton; Butyl rubber; Nitrile rubber; Polyethylene. Unsuitable material: polyvinyl alcohol. Wear chemically protective gloves (impervious), boots, aprons, and gauntlets to prevent prolonged or repeated skin contact.
Eye / face protection	:	Chemical splash goggles must be worn when handling this material. A full face shield may also be necessary.
Other protective equipment	:	An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.
General hygiene considerations	:	Do not breathe fumes or mists. Do not ingest. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colourless liquid.
Odour	:	No odour.
Odour threshold	:	Not applicable.
pH	:	14
Melting/Freezing point	:	Not available.
Initial boiling point and boiling range	:	111°C (231.8°F)
Flash point	:	Not applicable.
Flashpoint (Method)	:	Not applicable.
Evaporation rate (BuAe = 1)	:	N/Av
Flammability (solid, gas)	:	Not applicable.
Lower flammable limit (% by vol.)	:	Not applicable.
Upper flammable limit (% by vol.)	:	Not applicable.
Oxidizing properties	:	None known.
Explosive properties	:	Not explosive
Vapour pressure	:	negligible
Vapour density	:	Not available.
Relative density / Specific gravity	:	1.27-1.48
Solubility in water	:	Very soluble
Other solubility(ies)	:	Not available.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution	:	N/Ap (dissociates)
Auto-ignition temperature	:	N/Ap
Decomposition temperature	:	Not available.
Viscosity	:	N/Av
Volatiles (% by weight)	:	Not available.
Volatile organic Compounds (VOC's)	:	N/Av
Absolute pressure of container	:	N/Ap
Flame projection length	:	N/Ap

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Other physical/chemical comments
: None known or reported by the manufacturer.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive. May be corrosive to metals. Contact with most metals will generate flammable hydrogen gas. Contact with water will generate considerable heat.

Chemical stability : Material is stable under normal conditions.

Possibility of hazardous reactions
: Hazardous polymerization does not occur.

Conditions to avoid : Avoid heat and open flame. Keep away from incompatibles. Keep container tightly closed when not in use. Avoid contact with water.

Incompatible materials : Acids; Water; Metals (e.g. tin, aluminum, zinc and alloys containing these metals); Halogenated compounds; Nitrogen compounds.

Hazardous decomposition products
: None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES

Routes of entry Ingestion : YES

Routes of exposure skin absorption
: NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation
: May cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Sign and symptoms ingestion
: May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.

Sign and symptoms skin : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification: Skin Irritation - Category 1 Causes severe skin burns and eye damage.

Sign and symptoms eyes : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification: Eye Damage/Irritation - Category 1 Causes serious eye damage.

Potential Chronic Health Effects
: Chronic skin contact with low concentrations may cause dermatitis.

Mutagenicity : Not expected to be mutagenic in humans.

Carcinogenicity : No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

Reproductive effects & Teratogenicity
: Not expected to have other reproductive effects.

Sensitization to material : Not expected to be a skin or respiratory sensitizer.

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Specific target organ effects : Target Organs: Eyes, skin, respiratory system and digestive system.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).
Classification: Specific Target Organ Toxicity, Single Exposure -Category 3 (respiratory) May cause respiratory irritation.

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Medical conditions aggravated by overexposure
: Pre-existing skin, eye and respiratory disorders.

Synergistic materials : Not available.

Toxicological data : There is no data available for this product.

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
sodium hydroxide	N/Av	N/Av	N/Av
Water	N/Av	>90 mL/kg	N/Av

Other important toxicological hazards
: None known or reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : The ecological characteristics of this product have not been fully investigated.
The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.
Toxicity is primarily associated with pH.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
sodium hydroxide	1310-73-2	125 mg/L (Mosquito fish)	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
sodium hydroxide	1310-73-2	40 mg/L Water flea	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

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SAFETY DATA SHEET

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
sodium hydroxide	1310-73-2	N/Av	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

Persistence and degradability

: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulation potential : No data is available on the product itself.

Components	Partition coefficent n-octanol/ater (log Kow)	Bioconcentration factor (BCF)
sodium hydroxide (CAS 1310-73-2)	N/Ap	N/Ap
Water (CAS 7732-18-5)	N/Ap	N/Ap

Mobility in soil : No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle waste according to recommendations in Section 7.

Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations.

RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261.
It is the responsibility of the waste generator to determine the proper waste identification and disposal method.
For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	
TDG Additional information	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				
49CFR/DOT	UN1824	Sodium hydroxide solution	8	II	
49CFR/DOT Additional information	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Refer to 49 CFR Section 173.154.				
ICAO/IATA	UN1824	Sodium hydroxide solution	8	II	

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SAFETY DATA SHEET

ICAO/IATA Additional information	Refer to ICAO/IATA Packing Instruction				
IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	
IMDG Additional information	May be shipped as Limited Quantity, consult the IMDG regulations for details.				

Special precautions for user : None reported by the manufacturer.
Environmental hazards : See ECOLOGICAL INFORMATION, Section 12.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
: Not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
sodium hydroxide	1310-73-2	Yes	1000 lb/ 454 kg	None.	No	N/Ap
Water	7732-18-5	Yes	N/Ap	N/Av	No	N/Ap

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
sodium hydroxide	1310-73-2	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Water	7732-18-5	No	N/Ap	No	No	No	No	No	No

Canadian Information:

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

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International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
sodium hydroxide	1310-73-2	215-185-5	Present	Present	(2)-1972; (1)-410	KE-31487	Present	HSR001547
Water	7732-18-5	231-791-2	Present	Listed	Listed	KE-35400	Present	Listed

SECTION 16. OTHER INFORMATION

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DOT: Department of Transportation
EPA: Environmental Protection Agency
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organisation
IMDG: International Maritime Dangerous Goods
Inh: Inhalation
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
N/Ap: Not Applicable
N/Av: Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References : Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2015 (Chempendium, RTECs, HSDB, INCHEM).
European Chemicals Agency, Classification Legislation, 2015
Material Safety Data Sheet from manufacturer.
OECD: Organisation for Economic Co-operation and Development, 2015

Preparation Date (mm/dd/yyyy) : 10/09/2015

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SAFETY DATA SHEET

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

HMIS Rating : *- Chronic hazard 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

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

NFPA Rating

0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

: *Health:* 3 *Flammability:* 0 *Instability:* 1 *Special Hazards:* None.

Prepared for: Borden & Remington Corp 63 Water St. Fall River, MA 02722 Telephone: 508-675-0096	
Prepared by: ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancecenter.com	

DISCLAIMER

This Safety Data Sheet was prepared by ICC The Compliance Center Inc. using information provided by Borden & Remington Corp and CCOHS' Web Information Service. The information in the Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Borden & Remington Corp. expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc. and Borden & Remington Corp

END OF DOCUMENT

Appendix B

Receiving Water Laboratory Data Report

CERTIFICATE OF ANALYSIS

Catherine Malagrida
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Garvey St RGP (2100989)
ESS Laboratory Work Order Number: 21K0955

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 6:49 pm, Dec 07, 2021

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: Garvey St RGP

ESS Laboratory Work Order: 21K0955

SAMPLE RECEIPT

The following samples were received on November 19, 2021 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
21K0955-03	2100989-Outfall	Surface Water	200.7, 200.8, 245.1, 3113B, 350.1, 3500Cr B-2009, CALC

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0955

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

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: Garvey St RGP

ESS Laboratory Work Order: 21K0955

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
MADEP 18-2.1 - 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
5035A - 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: Garvey St RGP
Client Sample ID: 2100989-Outfall
Date Sampled: 11/19/21 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 21K0955
ESS Laboratory Sample ID: 21K0955-03
Sample Matrix: Surface 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 (5.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Arsenic	ND (2.5)		3113B		5	KJK	12/02/21 15:43	100	10	DK12332
Cadmium	ND (0.2)		200.8		5	NAR	11/29/21 13:29	100	10	DK12332
Chromium	**2.4** (2.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Copper	**19.4** (2.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Iron	**1430** (10.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Lead	**13.0** (2.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Mercury	ND (0.2)		245.1		1	JRB	11/24/21 13:24	20	40	DK12359
Nickel	ND (5.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Selenium	ND (5.0)		3113B		5	KJK	12/03/21 21:48	100	10	DK12332
Silver	ND (1.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332
Total Hardness	**57700** (82.3)		CALC		1	KJK	11/24/21 21:17	1	1	[CALC]
Zinc	**115** (5.0)		200.7		1	KJK	11/24/21 21:17	100	10	DK12332

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-Outfall
Date Sampled: 11/19/21 12:00
Percent Solids: N/A

ESS Laboratory Work Order: 21K0955
ESS Laboratory Sample ID: 21K0955-03
Sample Matrix: Surface Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.42** (0.10)		350.1		1	EEM	11/24/21 14:59	mg/L	DK12348
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	EAM	11/19/21 18:56	ug/L	DK11967

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0955

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DK12332 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Magnesium	ND	0.020	mg/L							
Nickel	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Cadmium	ND	0.2	ug/L							
Blank										
Arsenic	ND	0.5	ug/L							
Selenium	ND	1.0	ug/L							
LCS										
Antimony	51.5	5.0	ug/L	50.00		103	85-115			
Calcium	0.548	0.020	mg/L	0.5000		110	85-115			
Chromium	49.8	2.0	ug/L	50.00		100	85-115			
Copper	50.9	2.0	ug/L	50.00		102	85-115			
Iron	267	10.0	ug/L	250.0		107	85-115			
Lead	51.1	2.0	ug/L	50.00		102	85-115			
Magnesium	0.535	0.020	mg/L	0.5000		107	85-115			
Nickel	51.7	5.0	ug/L	50.00		103	85-115			
Silver	25.4	1.0	ug/L	25.00		101	85-115			
Zinc	54.4	5.0	ug/L	50.00		109	85-115			
LCS										
Cadmium	24.6	1.0	ug/L	25.00		98	85-115			
LCS										
Arsenic	49.0	12.5	ug/L	50.00		98	85-115			
Selenium	98.3	25.0	ug/L	100.0		98	85-115			
Batch DK12359 - 245.1/7470A										
Blank										
Mercury	ND	0.2	ug/L							
LCS										
Mercury	6.0	0.2	ug/L	6.042		99	85-115			
LCS Dup										
Mercury	5.9	0.2	ug/L	6.042		97	85-115	2	20	
524.2 Volatile Organic Compounds										
Classical Chemistry										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0955

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DK11967 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	511	10.0	ug/L	499.8		102	90-110			
LCS Dup										
Hexavalent Chromium	509	10.0	ug/L	499.8		102	90-110	0.3	20	
Batch DK12348 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.95	0.10	mg/L	0.9994		95	80-120			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0955

Notes and Definitions

U	Analyte included in the analysis, but not detected
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
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0955

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

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

Shipped/Delivered Via: ESS Courier

ESS Project ID: 21K0955
Date Received: 11/19/2021
Project Due Date: 11/30/2021
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: 2.5 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)
1	234358	Yes	N/A	Yes	500 mL Poly	HNO3	
2	234359	Yes	N/A	Yes	250 mL Poly	NP	
2	234360	Yes	No	Yes	VOA Vial	HCl	
2	234361	Yes	No	Yes	VOA Vial	HCl	
2	234362	Yes	No	Yes	VOA Vial	HCl	
3	234363	Yes	N/A	Yes	500 mL Poly	HNO3	
3	234364	Yes	N/A	Yes	500 mL Poly	H2SO4	
3	234365	Yes	N/A	Yes	250 mL Poly	NP	

2nd Review
Were all containers scanned into storage/lab? Initials KL Yes / No
Are barcode labels on correct containers? Yes / No / NA
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client:	GEI Consultants, Inc. - TB	ESS Project ID:	21K0955
		Date Received:	11/19/2021
Completed By:		Date & Time:	11-19-21 18:10
Reviewed By:		Date & Time:	11/19/21 1812

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

Turn Time X Standard Rush ____ Approved By: ____

State where samples were collected: MA NH

Is this project for: **RGP**

ESS LAB PROJECT ID: 21K0955

Reporting Limits -

Discharge into: Fresh Water ☒ Salt Water ☐

Electonic Deliverable Yes X No ____

Format: Excel X Access ____ PDF X Other ____

Project Manager: Cat Malagrida
Company: GEI Consultants
Address: 400 Unicorn Park Drive
Woburn MA

Project # 2100989

Project Name: Garvey St

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	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	11/18/21	15:00	G	GW	2100989-LB6	4	X											X		X					1,2
2	11/19/21	10:15	G	GW	2100989-LB6	4												X		X					
3	11/19/21	12:00	G	SW	2100989-outfall	4	X		X							X		X							
	hdm 12/7/21					1																			
						1																			
						5																			
						3																			
						1																			
						1																			
						3																			
						-																			
						1																			
						3																			
						2																			
						1																			
						2																			
						1																			
						1																			
						P	P	P	P	V	P	P	AG	P	P	P	-	P	AG	V	AG	V	AG	AG	

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

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

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: 2.5 ic

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[illegible]
*** TSS, TRC and Cl taken from the s[illegible] time**

PERMIT ATTACHED

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	11/19/21	GEI Fridge	[signature]	11/19/21 1445	[signature]
[signature]	11/19/21				

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

Page ____ of ____

Appendix C

Source Water Laboratory Data Report

CERTIFICATE OF ANALYSIS

Catherine Malagrida
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Garvey St RGP (2100989)
ESS Laboratory Work Order Number: 21K0807

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 5:41 pm, Nov 24, 2021

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: Garvey St RGP

ESS Laboratory Work Order: 21K0807

SAMPLE RECEIPT

The following samples were received on November 17, 2021 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
21K0807-01	2100989-MW201F	Ground Water	1664A, 200.7, 200.8, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608.3, 625.1 SIM, 8270D SIM, ASTM D3695, CALC

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

PROJECT NARRATIVE

625.1(SIM) Semi-Volatile Organic Compounds

21K0807-01 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (124% @ 15-110%)

D1K0452-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (122% @ 80-120%)

D1K0452-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Pentachlorophenol (22% @ 20%)

D1K0469-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (131% @ 80-120%)

D1K0469-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Pentachlorophenol (31% @ 20%)

DK11809-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Naphthalene (27% @ 20%)

Classical Chemistry

21K0807-01 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

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: Garvey St RGP

ESS Laboratory Work Order: 21K0807

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
MADEP 18-2.1 - 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
5035A - 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: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
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 (5.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Arsenic	ND (2.5)		3113B		5	KJK	11/19/21 20:41	100	10	DK11818
Cadmium	ND (0.2)		200.8		10	NAR	11/19/21 11:26	100	10	DK11818
Chromium	ND (2.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Copper	**8.0** (2.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Iron	**1340** (10.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Lead	ND (2.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Mercury	ND (0.20)		245.1		1	JRB	11/18/21 14:07	20	40	DK11823
Nickel	**20.2** (5.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Selenium	ND (5.0)		3113B		5	KJK	11/19/21 17:01	100	10	DK11818
Silver	ND (1.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818
Zinc	**21.4** (5.0)		200.7		1	KJK	11/19/21 13:29	100	10	DK11818

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
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 (5.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Arsenic	ND (2.5)		3113B		5	KJK	11/19/21 20:36	100	10	DK11818
Cadmium	ND (0.2)		200.8		10	NAR	11/19/21 11:21	100	10	DK11818
Chromium	ND (2.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Chromium III	ND (10.0)		200.7		1	EAM	11/19/21 13:25	1	1	[CALC]
Copper	**24.7** (2.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Iron	**1330** (10.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Lead	ND (2.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Mercury	ND (0.2)		245.1		1	JRB	11/18/21 14:05	20	40	DK11823
Nickel	**20.7** (5.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Selenium	ND (5.0)		3113B		5	KJK	11/19/21 16:56	100	10	DK11818
Silver	ND (1.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818
Total Hardness	**365000** (1650)		CALC		20	KJK	11/19/21 13:27	1	1	[CALC]
Zinc	**21.6** (5.0)		200.7		1	KJK	11/19/21 13:25	100	10	DK11818

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

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	11/19/21 19:10	D1K0460	DK11935
1,1,2-Trichloroethane	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,1-Dichloroethane	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,1-Dichloroethene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,2-Dichlorobenzene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,2-Dichloroethane	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,3-Dichlorobenzene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
1,4-Dichlorobenzene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Acetone	ND (5.0)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Benzene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Carbon Tetrachloride	ND (0.3)		524.2		1	11/19/21 19:10	D1K0460	DK11935
cis-1,2-Dichloroethene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Ethylbenzene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Methylene Chloride	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Naphthalene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Tetrachloroethene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Toluene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Trichloroethene	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Vinyl Chloride	ND (0.2)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Xylene O	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935
Xylene P,M	ND (0.5)		524.2		1	11/19/21 19:10	D1K0460	DK11935

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*88 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*91 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: JLG
Prepared: 11/18/21 12:00

608.3 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1221	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1232	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1242	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1248	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1254	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1260	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1262	ND (0.09)		608.3		1	11/18/21 23:37		DK11704
Aroclor 1268	ND (0.09)		608.3		1	11/18/21 23:37		DK11704

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*73 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*59 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*69 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 11/18/21 18:00

625.1(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Acenaphthylene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Anthracene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Benzo(a)anthracene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Benzo(a)pyrene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Benzo(b)fluoranthene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Benzo(g,h,i)perylene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Benzo(k)fluoranthene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
bis(2-Ethylhexyl)phthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Butylbenzylphthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Chrysene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Dibenzo(a,h)Anthracene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Diethylphthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Dimethylphthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Di-n-butylphthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Di-n-octylphthalate	ND (2.34)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Fluoranthene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Fluorene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Indeno(1,2,3-cd)Pyrene	ND (0.05)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Naphthalene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Pentachlorophenol	ND (0.84)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Phenanthrene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809
Pyrene	ND (0.19)		625.1 SIM		1	11/19/21 22:22	D1K0469	DK11809

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*43 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*124 %*	*S+*	*15-110*
Surrogate: 2-Fluorobiphenyl	*65 %*		*30-130*
Surrogate: Nitrobenzene-d5	*70 %*		*30-130*
Surrogate: p-Terphenyl-d14	*90 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 11/19/21 17:00

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	**0.313** (0.250)		8270D SIM		1	11/20/21 9:54	D1K0474	DK11849

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	*89 %*		*15-115*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**3.05** (0.10)		350.1		1	EEM	11/22/21 14:53	mg/L	DK11950
Chloride	**1170** (100)		300.0		200	EEM	11/17/21 20:06	mg/L	DK11725
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	EAM	11/17/21 18:48	ug/L	DK11746
Phenols	ND (50)		420.1		1	JLK	11/18/21 17:21	ug/L	DK11846
Total Cyanide	**389** (50.0)		4500 CN CE		10	EEM	11/18/21 12:15	ug/L	DK11819
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	11/19/21 13:41	mg/L	DK11917
Total Residual Chlorine	ND (20.0)		4500Cl D		1	CCP	11/17/21 18:35	ug/L	DK11757
Total Suspended Solids	ND (5)		2540D		1	CCP	11/18/21 14:57	mg/L	DK11829

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC
Prepared: 11/18/21 14:00

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromo-3-Chloropropane	ND (0.015)		504.1		1	11/18/21 15:42		DK11801
1,2-Dibromoethane	ND (0.015)		504.1		1	11/18/21 15:42		DK11801

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*119 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*118 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-MW201F
Date Sampled: 11/17/21 09:18
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 21K0807
ESS Laboratory Sample ID: 21K0807-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MJV
Prepared: 11/19/21 10:00

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	MJV	11/19/21 13:59		DK11901

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch DK11818 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Nickel	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Cadmium	ND	0.1	ug/L							
Blank										
Arsenic	ND	0.5	ug/L							
Selenium	ND	1.0	ug/L							
LCS										
Antimony	49.7	5.0	ug/L	50.00		99	85-115			
Chromium	48.4	2.0	ug/L	50.00		97	85-115			
Copper	49.9	2.0	ug/L	50.00		100	85-115			
Iron	225	10.0	ug/L	250.0		90	85-115			
Lead	50.4	2.0	ug/L	50.00		101	80-120			
Nickel	50.4	5.0	ug/L	50.00		101	85-115			
Silver	24.9	1.0	ug/L	25.00		100	85-115			
Zinc	50.4	5.0	ug/L	50.00		101	85-115			
LCS										
Cadmium	24.8	0.5	ug/L	25.00		99	85-115			
LCS										
Arsenic	52.4	12.5	ug/L	50.00		105	85-115			
Selenium	87.4	25.0	ug/L	100.0		87	85-115			
Batch DK11823 - 245.1/7470A										
Blank										
Mercury	ND	0.20	ug/L							
LCS										
Mercury	5.73	0.20	ug/L	6.042		95	85-115			
LCS Dup										
Mercury	5.80	0.20	ug/L	6.042		96	85-115	1	20	
Total Metals										
Batch DK11818 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	2.0	ug/L							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DK11818 - 3005A/200.7										
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Magnesium	ND	0.020	mg/L							
Nickel	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Cadmium	ND	0.1	ug/L							
Blank										
Arsenic	ND	0.5	ug/L							
Selenium	ND	1.0	ug/L							
LCS										
Antimony	49.7	5.0	ug/L	50.00		99	85-115			
Calcium	0.485	0.020	mg/L	0.5000		97	85-115			
Chromium	48.4	2.0	ug/L	50.00		97	85-115			
Copper	49.9	2.0	ug/L	50.00		100	85-115			
Iron	225	10.0	ug/L	250.0		90	85-115			
Lead	50.4	2.0	ug/L	50.00		101	85-115			
Magnesium	0.482	0.020	mg/L	0.5000		96	85-115			
Nickel	50.4	5.0	ug/L	50.00		101	85-115			
Silver	24.9	1.0	ug/L	25.00		100	85-115			
Zinc	50.4	5.0	ug/L	50.00		101	85-115			
LCS										
Cadmium	24.8	0.5	ug/L	25.00		99	85-115			
LCS										
Arsenic	52.4	12.5	ug/L	50.00		105	85-115			
Selenium	87.4	25.0	ug/L	100.0		87	85-115			
Batch DK11823 - 245.1/7470A										
Blank										
Mercury	ND	0.2	ug/L							
LCS										
Mercury	5.7	0.2	ug/L	6.042		95	85-115			
LCS Dup										
Mercury	5.8	0.2	ug/L	6.042		96	85-115	1	20	
524.2 Volatile Organic Compounds										
Batch DK11935 - 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							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch DK11935 - 524.2										
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	*4.54*		ug/L	*5.000*		*91*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.60*		ug/L	*5.000*		*92*	*80-120*			
LCS										
1,1,1-Trichloroethane	9.4	0.5	ug/L	10.00		94	70-130			
1,1,2-Trichloroethane	9.6	0.5	ug/L	10.00		96	70-130			
1,1-Dichloroethane	10.6	0.5	ug/L	10.00		106	70-130			
1,1-Dichloroethene	9.7	0.5	ug/L	10.00		97	70-130			
1,2-Dichlorobenzene	8.7	0.5	ug/L	10.00		87	70-130			
1,2-Dichloroethane	8.9	0.5	ug/L	10.00		89	70-130			
1,3-Dichlorobenzene	9.0	0.5	ug/L	10.00		90	70-130			
1,4-Dichlorobenzene	8.9	0.5	ug/L	10.00		89	70-130			
Acetone	39.9	5.0	ug/L	50.00		80	70-130			
Benzene	10.6	0.5	ug/L	10.00		106	70-130			
Carbon Tetrachloride	8.3	0.3	ug/L	10.00		83	70-130			
cis-1,2-Dichloroethene	10.1	0.5	ug/L	10.00		101	70-130			
Ethylbenzene	10.1	0.5	ug/L	10.00		101	70-130			
Methyl tert-Butyl Ether	9.4	0.5	ug/L	10.00		94	70-130			
Methylene Chloride	9.3	0.5	ug/L	10.00		93	70-130			
Naphthalene	8.1	0.5	ug/L	10.00		81	70-130			
Tertiary-amyl methyl ether	9.3	1.0	ug/L	10.00		93	70-130			
Tertiary-butyl Alcohol	36.6	25.0	ug/L	50.00		73	70-130			
Tetrachloroethene	9.4	0.5	ug/L	10.00		94	70-130			
Toluene	9.9	0.5	ug/L	10.00		99	70-130			
Trichloroethene	9.8	0.5	ug/L	10.00		98	70-130			
Vinyl Chloride	11.5	0.2	ug/L	10.00		115	70-130			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch DK11935 - 524.2										
Xylene O	9.8	0.5	ug/L	10.00		98	70-130			
Xylene P,M	18.7	0.5	ug/L	20.00		93	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*4.40*		ug/L	*5.000*		*88*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.83*		ug/L	*5.000*		*97*	*80-120*			
LCS Dup										
1,1,1-Trichloroethane	9.5	0.5	ug/L	10.00		95	70-130	0.5	20	
1,1,2-Trichloroethane	9.3	0.5	ug/L	10.00		93	70-130	3	20	
1,1-Dichloroethane	10.4	0.5	ug/L	10.00		104	70-130	1	20	
1,1-Dichloroethene	9.3	0.5	ug/L	10.00		93	70-130	4	20	
1,2-Dichlorobenzene	8.5	0.5	ug/L	10.00		85	70-130	3	20	
1,2-Dichloroethane	9.2	0.5	ug/L	10.00		92	70-130	3	20	
1,3-Dichlorobenzene	9.1	0.5	ug/L	10.00		91	70-130	1	20	
1,4-Dichlorobenzene	8.9	0.5	ug/L	10.00		89	70-130	0.7	20	
Acetone	34.8	5.0	ug/L	50.00		70	70-130	14	20	
Benzene	10.3	0.5	ug/L	10.00		103	70-130	3	20	
Carbon Tetrachloride	8.4	0.3	ug/L	10.00		84	70-130	0.4	20	
cis-1,2-Dichloroethene	9.9	0.5	ug/L	10.00		99	70-130	2	20	
Ethylbenzene	10.2	0.5	ug/L	10.00		102	70-130	0.7	20	
Methyl tert-Butyl Ether	9.3	0.5	ug/L	10.00		93	70-130	0.4	20	
Methylene Chloride	8.7	0.5	ug/L	10.00		87	70-130	7	20	
Naphthalene	7.9	0.5	ug/L	10.00		79	70-130	1	20	
Tertiary-amyl methyl ether	9.5	1.0	ug/L	10.00		95	70-130	2	20	
Tertiary-butyl Alcohol	36.1	25.0	ug/L	50.00		72	70-130	1	25	
Tetrachloroethene	9.2	0.5	ug/L	10.00		92	70-130	2	20	
Toluene	10.0	0.5	ug/L	10.00		100	70-130	1	20	
Trichloroethene	10.0	0.5	ug/L	10.00		100	70-130	1	20	
Vinyl Chloride	11.4	0.2	ug/L	10.00		114	70-130	1	20	
Xylene O	9.7	0.5	ug/L	10.00		97	70-130	1	20	
Xylene P,M	18.2	0.5	ug/L	20.00		91	70-130	2	20	
Surrogate: 1,2-Dichlorobenzene-d4	*4.41*		ug/L	*5.000*		*88*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.71*		ug/L	*5.000*		*94*	*80-120*			
608.3 Polychlorinated Biphenyls (PCB)										
Batch DK11704 - 3510C										
Blank										
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							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608.3 Polychlorinated Biphenyls (PCB)										
Batch DK11704 - 3510C										
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	*0.0382*		ug/L	*0.05000*		*76*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0350*		ug/L	*0.05000*		*70*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0308*		ug/L	*0.05000*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0330*		ug/L	*0.05000*		*66*	*30-150*			
LCS										
Aroclor 1016	0.74	0.10	ug/L	1.000		74	50-140			
Aroclor 1016 [2C]	0.70	0.10	ug/L	1.000		70	50-140			
Aroclor 1260	0.85	0.10	ug/L	1.000		85	1-164			
Aroclor 1260 [2C]	0.79	0.10	ug/L	1.000		79	1-164			
Surrogate: Decachlorobiphenyl	*0.0445*		ug/L	*0.05000*		*89*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0402*		ug/L	*0.05000*		*80*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0356*		ug/L	*0.05000*		*71*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0350*		ug/L	*0.05000*		*70*	*30-150*			
LCS Dup										
Aroclor 1016	0.68	0.10	ug/L	1.000		68	50-140	8	36	
Aroclor 1016 [2C]	0.65	0.10	ug/L	1.000		65	50-140	7	36	
Aroclor 1260	0.84	0.10	ug/L	1.000		84	1-164	0.4	38	
Aroclor 1260 [2C]	0.79	0.10	ug/L	1.000		79	1-164	0.07	38	
Surrogate: Decachlorobiphenyl	*0.0436*		ug/L	*0.05000*		*87*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0392*		ug/L	*0.05000*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0295*		ug/L	*0.05000*		*59*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0291*		ug/L	*0.05000*		*58*	*30-150*			
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK11809 - 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							

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Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK11809 - 3510C										
bis(2-Ethylhexyl)phthalate	ND	2.50	ug/L							
Butylbenzylphthalate	ND	2.50	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	ND	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	*1.01*		ug/L	*2.500*		*40*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*2.45*		ug/L	*3.750*		*65*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.34*		ug/L	*2.500*		*54*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.45*		ug/L	*2.500*		*58*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.02*		ug/L	*2.500*		*81*	*30-130*			
LCS										
Acenaphthene	3.12	0.20	ug/L	4.000		78	40-140			
Acenaphthylene	2.85	0.20	ug/L	4.000		71	40-140			
Anthracene	3.37	0.20	ug/L	4.000		84	40-140			
Benzo(a)anthracene	3.15	0.05	ug/L	4.000		79	40-140			
Benzo(a)pyrene	3.12	0.05	ug/L	4.000		78	40-140			
Benzo(b)fluoranthene	3.25	0.05	ug/L	4.000		81	40-140			
Benzo(g,h,i)perylene	3.61	0.20	ug/L	4.000		90	40-140			
Benzo(k)fluoranthene	3.28	0.05	ug/L	4.000		82	40-140			
bis(2-Ethylhexyl)phthalate	3.69	2.50	ug/L	4.000		92	40-140			
Butylbenzylphthalate	4.01	2.50	ug/L	4.000		100	40-140			
Chrysene	3.26	0.05	ug/L	4.000		82	40-140			
Dibenzo(a,h)Anthracene	3.58	0.05	ug/L	4.000		90	40-140			
Diethylphthalate	3.48	2.50	ug/L	4.000		87	40-140			
Dimethylphthalate	3.46	2.50	ug/L	4.000		86	40-140			
Di-n-butylphthalate	3.60	2.50	ug/L	4.000		90	40-140			
Di-n-octylphthalate	3.64	2.50	ug/L	4.000		91	40-140			
Fluoranthene	3.38	0.20	ug/L	4.000		85	40-140			
Fluorene	3.27	0.20	ug/L	4.000		82	40-140			
Indeno(1,2,3-cd)Pyrene	3.70	0.05	ug/L	4.000		93	40-140			
Naphthalene	3.96	0.20	ug/L	4.000		99	40-140			
Pentachlorophenol	4.42	0.90	ug/L	4.000		110	30-130			
Phenanthrene	3.30	0.20	ug/L	4.000		83	40-140			
Pyrene	3.34	0.20	ug/L	4.000		84	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*1.39*		ug/L	*2.500*		*56*	*30-130*			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK11809 - 3510C										
Surrogate: 2,4,6-Tribromophenol	*3.76*		ug/L	*3.750*		*100*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.71*		ug/L	*2.500*		*68*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.79*		ug/L	*2.500*		*72*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.25*		ug/L	*2.500*		*90*	*30-130*			
LCS Dup										
Acenaphthene	3.45	0.20	ug/L	4.000		86	40-140	10	20	
Acenaphthylene	3.24	0.20	ug/L	4.000		81	40-140	13	20	
Anthracene	3.66	0.20	ug/L	4.000		91	40-140	8	20	
Benzo(a)anthracene	3.47	0.05	ug/L	4.000		87	40-140	10	20	
Benzo(a)pyrene	3.40	0.05	ug/L	4.000		85	40-140	9	20	
Benzo(b)fluoranthene	3.55	0.05	ug/L	4.000		89	40-140	9	20	
Benzo(g,h,i)perylene	3.86	0.20	ug/L	4.000		97	40-140	7	20	
Benzo(k)fluoranthene	3.58	0.05	ug/L	4.000		90	40-140	9	20	
bis(2-Ethylhexyl)phthalate	4.12	2.50	ug/L	4.000		103	40-140	11	20	
Butylbenzylphthalate	4.46	2.50	ug/L	4.000		112	40-140	11	20	
Chrysene	3.55	0.05	ug/L	4.000		89	40-140	8	20	
Dibenzo(a,h)Anthracene	3.85	0.05	ug/L	4.000		96	40-140	7	20	
Diethylphthalate	3.93	2.50	ug/L	4.000		98	40-140	12	20	
Dimethylphthalate	3.83	2.50	ug/L	4.000		96	40-140	10	20	
Di-n-butylphthalate	4.04	2.50	ug/L	4.000		101	40-140	11	20	
Di-n-octylphthalate	4.06	2.50	ug/L	4.000		102	40-140	11	20	
Fluoranthene	3.68	0.20	ug/L	4.000		92	40-140	8	20	
Fluorene	3.61	0.20	ug/L	4.000		90	40-140	10	20	
Indeno(1,2,3-cd)Pyrene	4.01	0.05	ug/L	4.000		100	40-140	8	20	
Naphthalene	3.02	0.20	ug/L	4.000		75	40-140	27	20	D+
Pentachlorophenol	5.11	0.90	ug/L	4.000		128	30-130	15	20	
Phenanthrene	3.56	0.20	ug/L	4.000		89	40-140	8	20	
Pyrene	3.62	0.20	ug/L	4.000		91	40-140	8	20	
Surrogate: 1,2-Dichlorobenzene-d4	*1.56*		ug/L	*2.500*		*62*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.02*		ug/L	*3.750*		*107*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.91*		ug/L	*2.500*		*76*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.99*		ug/L	*2.500*		*79*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.42*		ug/L	*2.500*		*97*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch DK11849 - 3535A										
Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	*4.06*		ug/L	*5.000*		*81*	*15-115*			
LCS										
1,4-Dioxane	8.48	0.250	ug/L	10.00		85	40-140			
Surrogate: 1,4-Dioxane-d8	*4.00*		ug/L	*5.000*		*80*	*15-115*			
LCS Dup										
1,4-Dioxane	8.96	0.250	ug/L	10.00		90	40-140	6	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

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 DK11849 - 3535A										
Surrogate: 1,4-Dioxane-d8	*3.47*		ug/L	*5.000*		*69*	*15-115*			
Classical Chemistry										
Batch DK11725 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	9.6		mg/L	10.00		96	90-110			
Batch DK11746 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	513	10.0	ug/L	499.8		103	90-110			
LCS Dup										
Hexavalent Chromium	515	10.0	ug/L	499.8		103	90-110	0.3	20	
Batch DK11757 - General Preparation										
Blank										
Total Residual Chlorine	ND	20.0	ug/L							
LCS										
Total Residual Chlorine	2.54		mg/L	2.540		100	85-115			
Batch DK11819 - TCN Prep										
Blank										
Total Cyanide	ND	5.00	ug/L							
LCS										
Total Cyanide	20.6	5.00	ug/L	20.06		103	90-110			
LCS										
Total Cyanide	148	5.00	ug/L	150.4		99	90-110			
LCS Dup										
Total Cyanide	149	5.00	ug/L	150.4		99	90-110	0.1	20	
Batch DK11829 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	58		mg/L	59.20		98	80-120			
Batch DK11846 - General Preparation										
Blank										
Phenols	ND	50	ug/L							
LCS										
Phenols	1010	50	ug/L	1000		101	80-120			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DK11917 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	14	5	mg/L	19.38		72	66-114			
Batch DK11950 - General Preparation										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	1.00	0.10	mg/L	0.9994		100	80-120			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch DK11801 - 504/8011										
Blank										
1,2-Dibromo-3-Chloropropane	ND	0.015	ug/L							
1,2-Dibromo-3-Chloropropane [2C]	ND	0.015	ug/L							
1,2-Dibromoethane	ND	0.015	ug/L							
1,2-Dibromoethane [2C]	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.0881*		ug/L	*0.08000*		*110*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0855*		ug/L	*0.08000*		*107*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.044	0.015	ug/L	0.04000		109	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.042	0.015	ug/L	0.04000		105	70-130			
1,2-Dibromoethane	0.041	0.015	ug/L	0.04000		103	70-130			
1,2-Dibromoethane [2C]	0.039	0.015	ug/L	0.04000		97	70-130			
Surrogate: Pentachloroethane	*0.0919*		ug/L	*0.08000*		*115*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0859*		ug/L	*0.08000*		*107*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.090	0.015	ug/L	0.08000		112	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.086	0.015	ug/L	0.08000		108	70-130			
1,2-Dibromoethane	0.085	0.015	ug/L	0.08000		107	70-130			
1,2-Dibromoethane [2C]	0.088	0.015	ug/L	0.08000		110	70-130			
Surrogate: Pentachloroethane	*0.0982*		ug/L	*0.08000*		*123*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0965*		ug/L	*0.08000*		*121*	*30-150*			
Alcohol Scan by GC/FID										
Batch DK11901 - No Prep										
Blank										
Ethanol	ND	10	mg/L							
LCS										
Ethanol	1260	10	mg/L	1000		126	60-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Alcohol Scan by GC/FID										
Batch DK11901 - No Prep										
LCS Dup										
Ethanol	1280	10	mg/L	1000		128	60-140	2	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

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.
D+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
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
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K0807

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

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

Shipped/Delivered Via: ESS Courier

ESS Project ID: 21K0807
Date Received: 11/17/2021
Project Due Date: 11/24/2021
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: 2.6 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)
1	232881	Yes	N/A	Yes	1L Amber	H2SO4	
1	232882	Yes	N/A	Yes	500 mL Amber	H2SO4	
1	232883	Yes	N/A	Yes	1L Poly	NP	
1	232884	Yes	N/A	Yes	250 mL Poly	NP	
1	232885	Yes	N/A	Yes	250 mL Poly	NaOH	pH ≥ 12
1	232886	Yes	N/A	Yes	250 mL Poly	HNO3	
1	232887	Yes	N/A	Yes	500 mL Poly	HNO3	
1	232888	Yes	N/A	Yes	500 mL Poly	HNO3	
1	232889	Yes	No	Yes	VOA Vial	HCl	
1	232890	Yes	No	Yes	VOA Vial	HCl	
1	232891	Yes	No	Yes	VOA Vial	HCl	
1	232892	Yes	No	Yes	VOA Vial	HCl	
1	232893	Yes	No	Yes	VOA Vial	HCl	
1	232894	Yes	No	Yes	VOA Vial	HCl	
1	232895	Yes	No	Yes	VOA Vial	NP	
1	232896	Yes	N/A	Yes	1L Amber	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 21K0807
Date Received: 11/17/2021

1	232897	Yes	N/A	Yes	1L Amber	NP
1	232898	Yes	N/A	Yes	1L Amber	NP
1	232899	Yes	N/A	Yes	1L Amber	NP pH=7
1	232900	Yes	N/A	Yes	1L Amber	NP
1	232901	Yes	N/A	Yes	1L Amber	NP
1	232902	Yes	N/A	Yes	500 mL Poly	H2SO4

2nd Review

Initials KL

Were all containers scanned into storage/lab?	Yes / No
Are barcode labels on correct containers?	Yes / No / NA
Are all Flashpoint stickers attached/container ID # circled?	Yes / No / NA
Are all Hex Chrome stickers attached?	Yes / No / NA
Are all QC stickers attached?	Yes / No / NA
Are VOA stickers attached if bubbles noted?	

Completed By: [signature] Date & Time: 11.17.21 17:24

Reviewed By: [signature] Date & Time: 11/17/21 1811

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: 2110807

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 X Access ____ PDF X Other ____

Project Manager: Cat Malagrida
Company: GEI Consultants
Address: 400 Unicorn Park Drive
Woburn MA 01801

Project # 2100989
Project Name: Garvey Street
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	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 #
					Analysis																				
1	11/17/21	9:18	G	GW	2100989-MW201F	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: 2.6/u

Sampled by : Julia L. Farr

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)
	11/17/21 14:00			11/17/21 16:29	
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 writir

Page 1 of 1

CERTIFICATE OF ANALYSIS

Catherine Malagrida
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Garvey St RGP (2100989)
ESS Laboratory Work Order Number: 21K1087

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 4:40 pm, Dec 03, 2021

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: Garvey St RGP

ESS Laboratory Work Order: 21K1087

SAMPLE RECEIPT

The following samples were received on November 23, 2021 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
21K1087-01	2100989-EN-15D	Ground Water	200.7, 200.8, 245.1, 2540D, 300.0, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, ASTM D3695, CALC
21K1087-02	2100989-EN-15D	Ground Water	1664A, 608.3, 625.1 SIM, 8270D SIM

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

PROJECT NARRATIVE

524.2 Volatile Organic Compounds

DK12426-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Acetone (23% @ 20%)

625.1(SIM) Semi-Volatile Organic Compounds

21K1087-02 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (120% @ 15-110%)

D1K0577-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (110% @ 80-120%)

D1K0577-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4,6-Tribromophenol (26% @ 20%)

D1K0610-CCV1 **Calibration required quadratic regression (Q).**
Pentachlorophenol (118% @ 80-120%)

D1K0610-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4,6-Tribromophenol (28% @ 20%)

DK12404-BS1 **Surrogate recovery(ies) above upper control limit (S+).**
2,4,6-Tribromophenol (118% @ 15-110%)

Classical Chemistry

21K1087-01 **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

21K1087-01 **Elevated Method Reporting Limits due to sample matrix (EL).**
Cadmium , Lead , Nickel , Silver

Total Metals

21K1087-01 **Elevated Method Reporting Limits due to sample matrix (EL).**
Cadmium , Selenium , Silver

No other observations noted.

End of Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

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

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
MADEP 18-2.1 - 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
5035A - 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: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
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 (25.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Arsenic	**31.9** (25.0)		200.7		5	KJK	11/29/21 13:31	100	10	DK12332
Cadmium	**EL** ND (5.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Chromium	**35.1** (10.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Copper	**12.9** (10.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Iron	**7850** (50.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Lead	**EL** ND (10.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Mercury	ND (0.20)		245.1		1	JRB	11/30/21 11:47	20	40	DK12933
Nickel	**EL** ND (25.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Selenium	ND (5.0)		200.7		1	KJK	11/24/21 21:44	100	10	DK12332
Silver	**EL** ND (5.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332
Zinc	**51.8** (25.0)		200.7		5	BJV	11/29/21 13:31	100	10	DK12332

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
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 (25.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Arsenic	**74.3** (25.0)		200.7		5	KJK	11/29/21 13:29	100	10	DK12332
Cadmium	**EL** ND (5.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Chromium	**157** (10.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Chromium III	**157** (10.0)		200.7		5	EAM	11/29/21 13:29	1	1	[CALC]
Copper	**97.8** (10.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Iron	**105000** (50.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Lead	**32.8** (1.0)		200.8		10	NAR	11/29/21 14:30	100	10	DK12332
Mercury	ND (0.2)		245.1		1	JRB	11/30/21 11:45	20	40	DK12933
Nickel	**63.0** (25.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Selenium	**EL** ND (25.0)		200.7		5	KJK	11/29/21 13:29	100	10	DK12332
Silver	**EL** ND (5.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332
Total Hardness	**4730000** (41200)		CALC		500	BJV	11/30/21 13:54	1	1	[CALC]
Zinc	**358** (25.0)		200.7		5	BJV	11/29/21 13:29	100	10	DK12332

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

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	11/24/21 16:11	D1K0576	DK12426
1,1,2-Trichloroethane	**241** (50.0)		524.2		100	11/29/21 15:21	D1K0576	DK12426
1,1-Dichloroethane	**6.1** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
1,1-Dichloroethene	**83.0** (50.0)		524.2		100	11/29/21 15:21	D1K0576	DK12426
1,2-Dichlorobenzene	**0.8** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
1,2-Dichloroethane	**2.2** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
1,3-Dichlorobenzene	ND (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
1,4-Dichlorobenzene	ND (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Acetone	ND (5.0)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Benzene	**11.7** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Carbon Tetrachloride	ND (0.3)		524.2		1	11/24/21 16:11	D1K0576	DK12426
cis-1,2-Dichloroethene	**31200** (5000)		524.2		10000	11/29/21 14:21	D1K0576	DK12426
Ethylbenzene	**7.9** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Methylene Chloride	**1.7** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Naphthalene	**1.8** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Tetrachloroethene	**4.6** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Toluene	**273** (50.0)		524.2		100	11/29/21 15:21	D1K0576	DK12426
Trichloroethene	**126000** (5000)		524.2		10000	11/29/21 14:21	D1K0576	DK12426
Vinyl Chloride	**1210** (20.0)		524.2		100	11/29/21 15:21	D1K0576	DK12426
Xylene O	**11.2** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426
Xylene P,M	**21.3** (0.5)		524.2		1	11/24/21 16:11	D1K0576	DK12426

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*99 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*95 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**1.76** (0.10)		350.1		1	JLK	12/01/21 18:10	mg/L	DK13028
Chloride	**8840** (500)		300.0		1000	EEM	11/29/21 18:27	mg/L	DK12929
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	EAM	11/23/21 21:20	ug/L	DK12366
Phenols	ND (50)		420.1		1	JLK	12/01/21 15:55	ug/L	DL10141
Total Cyanide	ND (5.00)		4500 CN CE		1	EEM	12/01/21 12:35	ug/L	DL10121
Total Residual Chlorine	ND (20.0)		4500Cl D		1	CCP	11/23/21 20:45	ug/L	DK12365
Total Suspended Solids	**3500** (50)		2540D		1	CCP	11/24/21 15:39	mg/L	DK12427

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC
Prepared: 12/1/21 10:20

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromo-3-Chloropropane	ND (0.015)		504.1		1	12/01/21 15:08		DL10117
1,2-Dibromoethane	ND (0.015)		504.1		1	12/01/21 15:08		DL10117

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*110 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*97 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 09:30
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MJV
Prepared: 12/2/21 12:00

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	MJV	12/02/21 23:20		DL10240

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 15:30
Percent Solids: N/A
Initial Volume: 880
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC
Prepared: 11/25/21 11:45

608.3 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1221	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1232	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1242	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1248	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1254	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1260	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1262	ND (0.11)		608.3		1	11/29/21 16:53		DK12403
Aroclor 1268	ND (0.11)		608.3		1	11/29/21 16:53		DK12403

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*56 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*61 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*59 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*67 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 15:30
Percent Solids: N/A
Initial Volume: 870
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 11/25/21 11:45

625.1(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Acenaphthylene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Anthracene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Benzo(a)anthracene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Benzo(a)pyrene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Benzo(b)fluoranthene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Benzo(g,h,i)perylene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Benzo(k)fluoranthene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
bis(2-Ethylhexyl)phthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Butylbenzylphthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Chrysene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Dibenzo(a,h)Anthracene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Diethylphthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Dimethylphthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Di-n-butylphthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Di-n-octylphthalate	ND (11.5)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Fluoranthene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Fluorene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Indeno(1,2,3-cd)Pyrene	ND (0.23)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Naphthalene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Pentachlorophenol	ND (4.14)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Phenanthrene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404
Pyrene	ND (0.92)		625.1 SIM		1	11/29/21 21:24	D1K0610	DK12404

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*52 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*120 %*	*S+*	*15-110*
Surrogate: 2-Fluorobiphenyl	*65 %*		*30-130*
Surrogate: Nitrobenzene-d5	*68 %*		*30-130*
Surrogate: p-Terphenyl-d14	*86 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 15:30
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 11/29/21 17:00

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	**2.02** (0.250)		8270D SIM		1	12/01/21 9:28	D1K0641	DK12956

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	*76 %*		*15-115*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP
Client Sample ID: 2100989-EN-15D
Date Sampled: 11/23/21 15:30
Percent Solids: N/A

ESS Laboratory Work Order: 21K1087
ESS Laboratory Sample ID: 21K1087-02
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Total Petroleum Hydrocarbon	ND (5)		1664A		1	LAB	11/29/21 14:13	mg/L	DK12918

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch DK12332 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Arsenic	ND	5.00	ug/L							
Cadmium	ND	1.0	ug/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Nickel	ND	5.0	ug/L							
Selenium	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
LCS										
Antimony	51.5	5.0	ug/L	50.00		103	85-115			
Arsenic	48.6	5.00	ug/L	50.00		97	85-115			
Cadmium	24.4	1.0	ug/L	25.00		98	85-115			
Chromium	49.8	2.0	ug/L	50.00		100	85-115			
Copper	50.9	2.0	ug/L	50.00		102	85-115			
Iron	267	10.0	ug/L	250.0		107	85-115			
Lead	51.1	2.0	ug/L	50.00		102	80-120			
Nickel	51.7	5.0	ug/L	50.00		103	85-115			
Selenium	98.6	5.0	ug/L	100.0		99	80-120			
Silver	25.4	1.0	ug/L	25.00		101	85-115			
Zinc	54.4	5.0	ug/L	50.00		109	85-115			
Batch DK12933 - 245.1/7470A										
Blank										
Mercury	ND	0.20	ug/L							
LCS										
Mercury	5.65	0.20	ug/L	6.042		93	85-115			
LCS Dup										
Mercury	5.71	0.20	ug/L	6.042		94	85-115	1	20	
Total Metals										
Batch DK12332 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Arsenic	ND	5.0	ug/L							
Cadmium	ND	1.0	ug/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Magnesium	ND	0.020	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DK12332 - 3005A/200.7										
Nickel	ND	5.0	ug/L							
Selenium	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Lead	ND	0.5	ug/L							
LCS										
Antimony	51.5	5.0	ug/L	50.00		103	85-115			
Arsenic	48.6	5.0	ug/L	50.00		97	85-115			
Cadmium	24.4	1.0	ug/L	25.00		98	85-115			
Calcium	0.548	0.020	mg/L	0.5000		110	85-115			
Chromium	49.8	2.0	ug/L	50.00		100	85-115			
Copper	50.9	2.0	ug/L	50.00		102	85-115			
Iron	267	10.0	ug/L	250.0		107	85-115			
Magnesium	0.535	0.020	mg/L	0.5000		107	85-115			
Nickel	51.7	5.0	ug/L	50.00		103	85-115			
Selenium	98.6	5.0	ug/L	100.0		99	85-115			
Silver	25.4	1.0	ug/L	25.00		101	85-115			
Zinc	54.4	5.0	ug/L	50.00		109	85-115			
LCS										
Lead	46.7	2.5	ug/L	50.00		93	85-115			
LCS Dup										
Cadmium	23.7	1.0	ug/L	25.00		95	85-115	3	20	
Batch DK12933 - 245.1/7470A										
Blank										
Mercury	ND	0.2	ug/L							
LCS										
Mercury	5.6	0.2	ug/L	6.042		93	85-115			
LCS Dup										
Mercury	5.7	0.2	ug/L	6.042		94	85-115	1	20	
524.2 Volatile Organic Compounds										
Batch DK12426 - 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							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch DK12426 - 524.2										
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	*4.48*		ug/L	*5.000*		*90*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.71*		ug/L	*5.000*		*94*	*80-120*			
LCS										
1,1,1-Trichloroethane	9.8	0.5	ug/L	10.00		98	70-130			
1,1,2-Trichloroethane	9.5	0.5	ug/L	10.00		95	70-130			
1,1-Dichloroethane	9.7	0.5	ug/L	10.00		97	70-130			
1,1-Dichloroethene	11.7	0.5	ug/L	10.00		117	70-130			
1,2-Dichlorobenzene	9.9	0.5	ug/L	10.00		99	70-130			
1,2-Dichloroethane	9.6	0.5	ug/L	10.00		96	70-130			
1,3-Dichlorobenzene	9.7	0.5	ug/L	10.00		97	70-130			
1,4-Dichlorobenzene	9.9	0.5	ug/L	10.00		99	70-130			
Acetone	49.3	5.0	ug/L	50.00		99	70-130			
Benzene	10.0	0.5	ug/L	10.00		100	70-130			
Carbon Tetrachloride	10.1	0.3	ug/L	10.00		101	70-130			
cis-1,2-Dichloroethene	9.9	0.5	ug/L	10.00		99	70-130			
Ethylbenzene	9.9	0.5	ug/L	10.00		99	70-130			
Methyl tert-Butyl Ether	10.2	0.5	ug/L	10.00		102	70-130			
Methylene Chloride	11.7	0.5	ug/L	10.00		117	70-130			
Naphthalene	9.2	0.5	ug/L	10.00		92	70-130			
Tertiary-amyl methyl ether	9.4	1.0	ug/L	10.00		94	70-130			
Tertiary-butyl Alcohol	46.0	25.0	ug/L	50.00		92	70-130			
Tetrachloroethene	9.9	0.5	ug/L	10.00		99	70-130			
Toluene	9.8	0.5	ug/L	10.00		98	70-130			
Trichloroethene	9.6	0.5	ug/L	10.00		96	70-130			
Vinyl Chloride	10.4	0.2	ug/L	10.00		104	70-130			
Xylene O	10.0	0.5	ug/L	10.00		100	70-130			
Xylene P,M	20.1	0.5	ug/L	20.00		100	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*4.64*		ug/L	*5.000*		*93*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.99*		ug/L	*5.000*		*100*	*80-120*			
LCS Dup										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch DK12426 - 524.2										
1,1,1-Trichloroethane	9.6	0.5	ug/L	10.00		96	70-130	2	20	
1,1,2-Trichloroethane	9.9	0.5	ug/L	10.00		99	70-130	3	20	
1,1-Dichloroethane	9.9	0.5	ug/L	10.00		99	70-130	3	20	
1,1-Dichloroethene	11.9	0.5	ug/L	10.00		119	70-130	1	20	
1,2-Dichlorobenzene	10.1	0.5	ug/L	10.00		101	70-130	2	20	
1,2-Dichloroethane	9.7	0.5	ug/L	10.00		97	70-130	1	20	
1,3-Dichlorobenzene	9.8	0.5	ug/L	10.00		98	70-130	0.9	20	
1,4-Dichlorobenzene	10.1	0.5	ug/L	10.00		101	70-130	2	20	
Acetone	62.0	5.0	ug/L	50.00		124	70-130	23	20	D+
Benzene	10.1	0.5	ug/L	10.00		101	70-130	1	20	
Carbon Tetrachloride	10.0	0.3	ug/L	10.00		100	70-130	0.9	20	
cis-1,2-Dichloroethene	10.1	0.5	ug/L	10.00		101	70-130	1	20	
Ethylbenzene	10.0	0.5	ug/L	10.00		100	70-130	0.9	20	
Methyl tert-Butyl Ether	10.3	0.5	ug/L	10.00		103	70-130	0.5	20	
Methylene Chloride	12.0	0.5	ug/L	10.00		120	70-130	2	20	
Naphthalene	9.4	0.5	ug/L	10.00		94	70-130	2	20	
Tertiary-amyl methyl ether	10.0	1.0	ug/L	10.00		100	70-130	7	20	
Tertiary-butyl Alcohol	49.7	25.0	ug/L	50.00		99	70-130	8	25	
Tetrachloroethene	10.0	0.5	ug/L	10.00		100	70-130	1	20	
Toluene	9.8	0.5	ug/L	10.00		98	70-130	0.5	20	
Trichloroethene	9.8	0.5	ug/L	10.00		98	70-130	2	20	
Vinyl Chloride	10.3	0.2	ug/L	10.00		103	70-130	0.2	20	
Xylene O	9.9	0.5	ug/L	10.00		99	70-130	0.8	20	
Xylene P,M	20.6	0.5	ug/L	20.00		103	70-130	3	20	
Surrogate: 1,2-Dichlorobenzene-d4	*4.84*		ug/L	*5.000*		*97*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.81*		ug/L	*5.000*		*96*	*80-120*			
608.3 Polychlorinated Biphenyls (PCB)										
Batch DK12403 - 3510C										
Blank										
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							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608.3 Polychlorinated Biphenyls (PCB)										
Batch DK12403 - 3510C										
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	*0.0392*		ug/L	*0.05000*		*78*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0413*		ug/L	*0.05000*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0263*		ug/L	*0.05000*		*53*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0290*		ug/L	*0.05000*		*58*	*30-150*			
LCS										
Aroclor 1016	0.88	0.10	ug/L	1.000		88	50-140			
Aroclor 1016 [2C]	0.80	0.10	ug/L	1.000		80	50-140			
Aroclor 1260	0.82	0.10	ug/L	1.000		82	1-164			
Aroclor 1260 [2C]	0.83	0.10	ug/L	1.000		83	1-164			
Surrogate: Decachlorobiphenyl	*0.0382*		ug/L	*0.05000*		*76*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0401*		ug/L	*0.05000*		*80*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0335*		ug/L	*0.05000*		*67*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0349*		ug/L	*0.05000*		*70*	*30-150*			
LCS Dup										
Aroclor 1016	0.87	0.10	ug/L	1.000		87	50-140	2	36	
Aroclor 1016 [2C]	0.81	0.10	ug/L	1.000		81	50-140	1	36	
Aroclor 1260	0.89	0.10	ug/L	1.000		89	1-164	8	38	
Aroclor 1260 [2C]	0.91	0.10	ug/L	1.000		91	1-164	9	38	
Surrogate: Decachlorobiphenyl	*0.0412*		ug/L	*0.05000*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0435*		ug/L	*0.05000*		*87*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0320*		ug/L	*0.05000*		*64*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0325*		ug/L	*0.05000*		*65*	*30-150*			
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK12404 - 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	2.50	ug/L							
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK12404 - 3510C										
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	ND	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	*1.26*		ug/L	*2.500*		*50*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.02*		ug/L	*3.750*		*107*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.68*		ug/L	*2.500*		*67*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.00*		ug/L	*2.500*		*80*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.49*		ug/L	*2.500*		*100*	*30-130*			
LCS										
Acenaphthene	3.27	0.20	ug/L	4.000		82	40-140			
Acenaphthylene	3.05	0.20	ug/L	4.000		76	40-140			
Anthracene	3.54	0.20	ug/L	4.000		89	40-140			
Benzo(a)anthracene	3.15	0.05	ug/L	4.000		79	40-140			
Benzo(a)pyrene	3.18	0.05	ug/L	4.000		79	40-140			
Benzo(b)fluoranthene	3.47	0.05	ug/L	4.000		87	40-140			
Benzo(g,h,i)perylene	3.41	0.20	ug/L	4.000		85	40-140			
Benzo(k)fluoranthene	3.30	0.05	ug/L	4.000		82	40-140			
bis(2-Ethylhexyl)phthalate	4.40	2.50	ug/L	4.000		110	40-140			
Butylbenzylphthalate	4.73	2.50	ug/L	4.000		118	40-140			
Chrysene	3.28	0.05	ug/L	4.000		82	40-140			
Dibenzo(a,h)Anthracene	3.54	0.05	ug/L	4.000		89	40-140			
Diethylphthalate	3.97	2.50	ug/L	4.000		99	40-140			
Dimethylphthalate	3.74	2.50	ug/L	4.000		94	40-140			
Di-n-butylphthalate	4.13	2.50	ug/L	4.000		103	40-140			
Di-n-octylphthalate	4.38	2.50	ug/L	4.000		109	40-140			
Fluoranthene	3.35	0.20	ug/L	4.000		84	40-140			
Fluorene	3.42	0.20	ug/L	4.000		85	40-140			
Indeno(1,2,3-cd)Pyrene	3.53	0.05	ug/L	4.000		88	40-140			
Naphthalene	2.53	0.20	ug/L	4.000		63	40-140			
Pentachlorophenol	2.31	0.90	ug/L	4.000		58	30-130			
Phenanthrene	3.32	0.20	ug/L	4.000		83	40-140			
Pyrene	3.29	0.20	ug/L	4.000		82	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*1.53*		ug/L	*2.500*		*61*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.44*		ug/L	*3.750*		*118*	*15-110*			*S+*
Surrogate: 2-Fluorobiphenyl	*1.88*		ug/L	*2.500*		*75*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.04*		ug/L	*2.500*		*82*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.35*		ug/L	*2.500*		*94*	*30-130*			
LCS Dup										

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DK12404 - 3510C										
Acenaphthene	3.05	0.20	ug/L	4.000		76	40-140	7	20	
Acenaphthylene	2.83	0.20	ug/L	4.000		71	40-140	7	20	
Anthracene	3.18	0.20	ug/L	4.000		80	40-140	11	20	
Benzo(a)anthracene	2.80	0.05	ug/L	4.000		70	40-140	12	20	
Benzo(a)pyrene	2.78	0.05	ug/L	4.000		70	40-140	13	20	
Benzo(b)fluoranthene	2.97	0.05	ug/L	4.000		74	40-140	16	20	
Benzo(g,h,i)perylene	2.84	0.20	ug/L	4.000		71	40-140	18	20	
Benzo(k)fluoranthene	2.92	0.05	ug/L	4.000		73	40-140	12	20	
bis(2-Ethylhexyl)phthalate	3.93	2.50	ug/L	4.000		98	40-140	11	20	
Butylbenzylphthalate	4.07	2.50	ug/L	4.000		102	40-140	15	20	
Chrysene	2.96	0.05	ug/L	4.000		74	40-140	11	20	
Dibenzo(a,h)Anthracene	2.95	0.05	ug/L	4.000		74	40-140	18	20	
Diethylphthalate	3.58	2.50	ug/L	4.000		90	40-140	10	20	
Dimethylphthalate	3.38	2.50	ug/L	4.000		84	40-140	10	20	
Di-n-butylphthalate	3.72	2.50	ug/L	4.000		93	40-140	10	20	
Di-n-octylphthalate	3.85	2.50	ug/L	4.000		96	40-140	13	20	
Fluoranthene	3.10	0.20	ug/L	4.000		78	40-140	8	20	
Fluorene	3.13	0.20	ug/L	4.000		78	40-140	9	20	
Indeno(1,2,3-cd)Pyrene	2.98	0.05	ug/L	4.000		74	40-140	17	20	
Naphthalene	2.48	0.20	ug/L	4.000		62	40-140	2	20	
Pentachlorophenol	2.57	0.90	ug/L	4.000		64	30-130	10	20	
Phenanthrene	2.98	0.20	ug/L	4.000		75	40-140	11	20	
Pyrene	2.97	0.20	ug/L	4.000		74	40-140	10	20	
Surrogate: 1,2-Dichlorobenzene-d4	*1.37*		ug/L	*2.500*		*55*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.98*		ug/L	*3.750*		*106*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.68*		ug/L	*2.500*		*67*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.87*		ug/L	*2.500*		*75*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.07*		ug/L	*2.500*		*83*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch DK12956 - 3535A										
Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	*4.76*		ug/L	*5.000*		*95*	*15-115*			
LCS										
1,4-Dioxane	8.17	0.250	ug/L	10.00		82	40-140			
Surrogate: 1,4-Dioxane-d8	*5.26*		ug/L	*5.000*		*105*	*15-115*			
LCS Dup										
1,4-Dioxane	8.46	0.250	ug/L	10.00		85	40-140	3	20	
Surrogate: 1,4-Dioxane-d8	*4.83*		ug/L	*5.000*		*97*	*15-115*			
Classical Chemistry										
Batch DK12365 - General Preparation										
Blank										

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DK12365 - General Preparation										
Total Residual Chlorine	ND	20.0	ug/L							
LCS										
Total Residual Chlorine	2.54		mg/L	2.540		100	85-115			
Batch DK12366 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	498	10.0	ug/L	499.8		100	90-110			
LCS Dup										
Hexavalent Chromium	500	10.0	ug/L	499.8		100	90-110	0.3	20	
Batch DK12427 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	26		mg/L	26.80		97	80-120			
Batch DK12918 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	15	5	mg/L	19.38		78	66-114			
Batch DK12929 - General Preparation										
Blank										
Chloride	ND	0.5	mg/L							
LCS										
Chloride	9.4		mg/L	10.00		94	90-110			
Batch DK13028 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.97	0.10	mg/L	0.9994		97	80-120			
Batch DL10121 - TCN Prep										
Blank										
Total Cyanide	ND	5.00	ug/L							
LCS										
Total Cyanide	20.7	5.00	ug/L	20.06		103	90-110			
LCS										
Total Cyanide	149	5.00	ug/L	150.4		99	90-110			
LCS Dup										
Total Cyanide	149	5.00	ug/L	150.4		99	90-110	0.4	20	

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DL10141 - General Preparation										
Blank										
Phenols	ND	50	ug/L							
LCS										
Phenols	1020	50	ug/L	1000		102	80-120			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch DL10117 - 504/8011										
Blank										
1,2-Dibromo-3-Chloropropane	ND	0.015	ug/L							
1,2-Dibromo-3-Chloropropane [2C]	ND	0.015	ug/L							
1,2-Dibromoethane	ND	0.015	ug/L							
1,2-Dibromoethane [2C]	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.0869*		ug/L	*0.08000*		*109*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0838*		ug/L	*0.08000*		*105*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.044	0.015	ug/L	0.04000		110	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.040	0.015	ug/L	0.04000		101	70-130			
1,2-Dibromoethane	0.039	0.015	ug/L	0.04000		97	70-130			
1,2-Dibromoethane [2C]	0.043	0.015	ug/L	0.04000		108	70-130			
Surrogate: Pentachloroethane	*0.0870*		ug/L	*0.08000*		*109*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0865*		ug/L	*0.08000*		*108*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.095	0.015	ug/L	0.08000		119	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.088	0.015	ug/L	0.08000		110	70-130			
1,2-Dibromoethane	0.089	0.015	ug/L	0.08000		111	70-130			
1,2-Dibromoethane [2C]	0.092	0.015	ug/L	0.08000		115	70-130			
Surrogate: Pentachloroethane	*0.0876*		ug/L	*0.08000*		*110*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0830*		ug/L	*0.08000*		*104*	*30-150*			
Alcohol Scan by GC/FID										
Batch DL10240 - No Prep										
Blank										
Ethanol	ND	10	mg/L							
LCS										
Ethanol	982	10	mg/L	1000		98	60-140			
LCS Dup										
Ethanol	948	10	mg/L	1000		95	60-140	4	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

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+	Relative percent difference for duplicate is outside of criteria (D+).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
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
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Garvey St RGP

ESS Laboratory Work Order: 21K1087

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

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

Shipped/Delivered Via: ESS Courier

ESS Project ID: 21K1087
Date Received: 11/23/2021
Project Due Date: 12/2/2021
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: 1.5 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:

Added Sample 2

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)
1	236131	Yes	N/A	Yes	500 mL Amber	H2SO4	
1	236132	Yes	N/A	Yes	1L Poly	NP	
1	236133	Yes	N/A	Yes	500 mL Poly	HNO3	
1	236134	Yes	N/A	Yes	500 mL Poly	HNO3	
1	236135	Yes	N/A	Yes	500 mL Poly	H2SO4	
1	236136	Yes	N/A	Yes	250 mL Poly	NP	
1	236137	Yes	N/A	Yes	250 mL Poly	NaOH	
1	236138	Yes	No	Yes	VOA Vial	HCl	
1	236139	Yes	No	Yes	VOA Vial	HCl	
1	236140	Yes	No	Yes	VOA Vial	HCl	
1	236141	Yes	No	Yes	VOA Vial	HCl	
1	236142	Yes	No	Yes	VOA Vial	HCl	
1	236143	Yes	No	Yes	VOA Vial	HCl	
1	236144	Yes	No	Yes	VOA Vial	NP	
1	236171	Yes	N/A	Yes	250 mL Poly	HNO3	
2	236672	Yes	N/A	Yes	1L Amber	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 21K1087

Date Received: 11/23/2021

2	236673	Yes	N/A	Yes	1L Amber	NP
2	236674	Yes	N/A	Yes	1L Amber	NP
2	236675	Yes	N/A	Yes	1L Amber	H2SO4

2nd Review

Were all containers scanned into storage/lab? Initials KL

Are barcode labels on correct containers? Yes / No

Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA

Are all Hex Chrome stickers attached? Yes / No / NA

Are all QC stickers attached? Yes / No / NA

Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [signature] Date & Time: 11.24.21 15:41

Reviewed By: [signature] Date & Time: 11/24/21 1602

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: 21K1087

Turn Time: X Standard Rush _____ Approved By: _____

State where samples were collected: (MA) NH

Reporting Limits -

Discharge into: Fresh Water ☒ Salt Water ☐

Is this project for: **RGP**

Electonic Deliverable Yes X No ____
Format: Excel X Access ____ PDF X Other ____

Project Manager: Cat Malagnida
Company: GEI Consultants
Address: 400 Unicorn Park Dr.
Woburn MA 01801

Project #: 2100989
Project Name: Garvey St
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	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 624	1,4-Dioxane 8270-SIM	EDB 604.1	RGP SVOC Log List 625-SIM	PCB 608	Comment #
1	11/23/21	9:30	G	GW	2100989-EN-15D	15	X	X	X	X	X	X		X	X	X	X	X	X	X		X			1,2
2	11/23/21	9:30/15:30	C	GW	2100989-EN-15D*	4							X				X	JHF			X		X	X	3

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: 1.5 ice

Sampled by: Julia K. Farr

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** 3) VERY LOW Sample Volume

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Julia Farr	12:30	GEI Fridge	Fridge	11/23/21 1610	Cad F.
Cad F.	11/23/21 1660	Cad F.		11/23/21 15:01	

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

Julia Farr 11/23/21 10:39 11/24/21 15:01 11.24.21 15:01

*LOW SAMPLE VOLUME

Appendix D

Endangered Species Act Eligibility Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: November 05, 2021
Consultation Code: 05E1NE00-2022-SLI-0395
Event Code: 05E1NE00-2022-E-01357
Project Name: Garvey Street

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2022-SLI-0395
Event Code: Some(05E1NE00-2022-E-01357)
Project Name: Garvey Street
Project Type: DREDGE / EXCAVATION
Project Description: An NOI is being prepared for the discharge of dewatering effluent during construction of the proposed Garvey Street mixed use development located at the intersection of Garvey Street and Revere Beach Parkway in Everett, Massachusetts (the Property; Fig. 1). The Property is a vacant 4.7 acre industrial property at 35 Garvey Street in Everett, Massachusetts, just south of Route 16/Revere Beach Parkway (Figs. 1 and 2). 35 Garvey Street, LLC purchased the property in March 2015. The Site was occupied and owned by Market Forge Industries from 1916 until 2015. Market Forge Industries was a manufacturer of industrial ovens and other steel products. J. Moore Company operated a machine shop on the eastern portion of the Site from 1918 until 1985. The abutting properties are also commercial or industrial properties.

The Property has been largely covered by buildings for much of the last 100 years. The Site buildings were razed in 2015. The Property housed multiple aboveground storage tanks (ASTs) and underground storage tanks (USTs) in and adjacent to the former buildings for fuel oil and solvent storage. These tanks were reportedly removed as part of the building demolition in 2015. Site investigations have identified PCBs in soil ranging from 1 ppm to 50,900 ppm. Because PCBs in soil are at concentrations greater than (>) 50 ppm, the site requires characterization and cleanup in compliance with the TSCA and all media contaminated with PCBs >1 ppm are addressed as PCB remediation waste. The Property is a Massachusetts Department of Environmental Protection (MassDEP) disposal site (Release Tracking Number [RTN] 3-28681). As the Property is an open MassDEP disposal site, a MassDEP Bureau of Resource Protection fee is not required.

Redevelopment activities will include the excavation of PCB and other contaminated soils during construction. Because PCBs at concentration greater than or equal to 50 parts per million (ppm) have been detected in the soil, the removal and disposal of all PCB-impacted materials at the Property must be conducted in accordance with the requirements of the Toxic Substances Control Act (TSCA) regulations, along with the Massachusetts Contingency Plan (MCP) regulations. A mixed use building is planned to be developed at the site.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.402096799999995,-71.0534313074321,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

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

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

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

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

---

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

Insects

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

Critical habitats

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

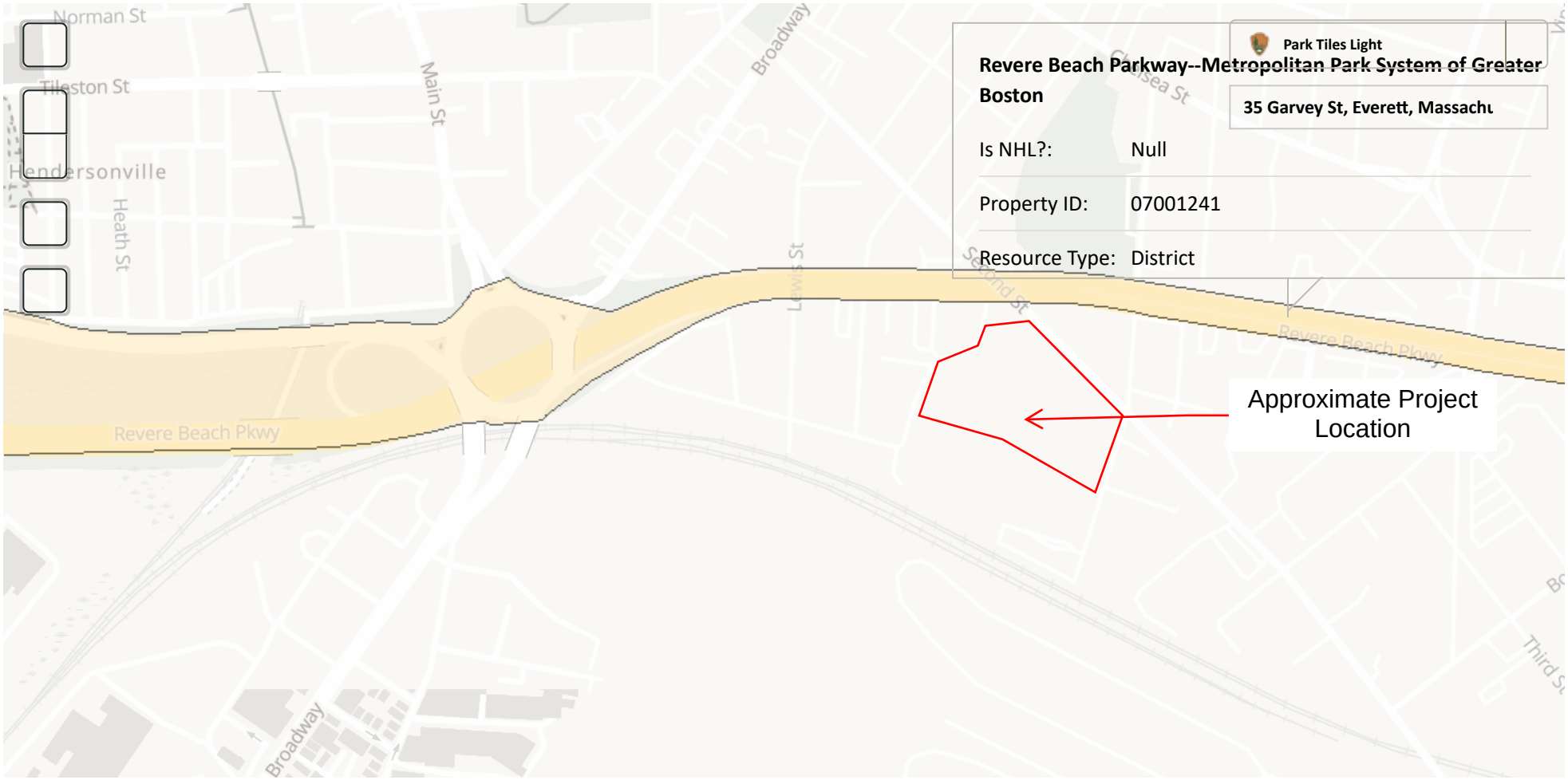
Appendix E

Historic Preservation Documentation

National Register of Historic Places

National Park Service
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. …



Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Everett; Street Name: Garvey; Resource Type(s): ü, Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
EVR.220	Market Forge Company Works	35 Garvey St	Everett	1916

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Everett; Street Name: Second St; Resource Type(s): Building, Area, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
EVR.170	Boston Varnish Company	Boston St	Everett	c 1900
EVR.222	Market Forge Company Shed	452 Second St	Everett	c 1925
EVR.38	South Malden Engine House	537 Second St	Everett	1860

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Everett; Street Name: Spring St; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
EVR.224	Argo Tile and Pottery Company	103 Spring St	Everett	1915
EVR.223	Stone and Forsyth Paper and Cordage Company	109 Spring St	Everett	c 1913

Garvey St - MACRIS Map