

June 26, 2020

89 Crawford Street

Leominster, Massachusetts 01453

Tel: 774.450.7177 Fax: 888.835.0617 www.lrt-llc.net

U.S. Environmental Protection Agency Office of Ecosystem Protection EPA/OEP RGP Applications Coordinator 5 Post Office Square, Suite 100 (OEP06-4) Boston, Massachusetts 02109-3912

Reference: Notice of Intent (NOI) - Remediation General Permit (RGP)

Liberty Utilities

North Attleborough, Massachusetts

Dear Sir/Madam:

On behalf of Charter Contracting Company (Charter), Lockwood Remediation Technologies, LLC (LRT) has prepared this Notice of Intent (NOI) requesting a determination of coverage under the United States Environmental Protection Agency's (EPA's) Remediation General Permit (RGP), pursuant EPA's National Pollutant Discharge Elimination System (NPDES) program. This NOI was prepared in accordance with the general requirements of the NPDES RGP and related guidance documentation provided by EPA. The completed NOI Form is provided in **Appendix A**.

#### **Site Information**

This NOI has been prepared for the management groundwater that will be generated during dewatering activities for excavations of contaminated soil. The project is to take place at the existing 4.55-acre Liberty Utilities Mount Hope Street Facility located in North Attleborough, Massachusetts (the Site). The site is listed under Release Tracking Number (RTN) 4-17374. Work will take place in multiple areas across the site, several areas are located along the Ten Mile River and Mire Brook. The site is largely unoccupied and consists of wooded areas, fields, Ten Mile River, Mire Brook, and several abandoned structures. A portion of the site is currently occupied by a single-story concrete natural gas distribution control building. The work is anticipated to be completed within twelve months. A Site Locus is provided as **Figure 1** and a Site Plan satisfying the requirements of RGP Appendix IV Part I.B and I.D is provided as **Figure 2**.

### **Work Summary**

The work includes excavation of soil contaminated with Manufactured Gas Plant (MGP) related compounds. To remove contaminated soils in the dry, dewatering will be required to lower the groundwater table as work is being performed. To do this, several wellpoint system will be employed around select soil excavation areas. Several other excavations will be dewatered with filtered sumps placed in low spots within the excavations. The water generated during dewatering (Source water) will be

pumped to a treatment system prior to direct discharge to Ten Mile River. To characterize groundwater from the proposed excavation area, LRT collected representative groundwater samples from an onsite monitoring well on June 15, 2020 (**Figure 2**). A sample of the receiving water (Ten Mile River) was also collected on the same day. The samples were analyzed for various parameters in accordance with the NPDES RGP Activity Category III-G.

### **Discharge and Receiving Surface Water Information**

A summary of the analytical results is provided in **Tables 1 and 2** included within **Appendix A**, and copies of the laboratory data reports are provided in **Appendix B**. Concentrations of Benzene, Naphthalene, total BTEX and iron were detected in groundwater at concentrations above the respective NPDES RGP Effluent Limitations. To meet these standards, Source water will undergo treatment that includes bag filtration, carbon filtration, and ion exchange prior to discharge. Details of the water treatment system are provided below.

### **Water Treatment System**

A water treatment system schematic is provided as **Figure 3**. Cutsheets of the system components, product information and Safety Data Sheets (SDS) are included in **Appendix C**.

Source water will be pumped to the primary water treatment system with a design flow of up to 500 gallons per minute (gpm); the average effluent flow of the system is estimated to be 350 gpm, and the maximum flow will not exceed 500 gpm. Source water will enter two 21,000-gallon frac tanks, plumbed in parallel, at the head of the system, the water will be treated with LRT E50 coagulant and LRT 823 flocculant inside the frac tanks. From the frac tanks water will flow to two 18,000-gallon weir tanks plumped in parallel. From the weir tanks, water will then be pumped to a multi-bag filter skid (made up of two multi bag filter housings each housing containing six bag filters), followed by three dual cartridge filer skids plumed in parallel (each skid will be made up of two cartridge housings each housing containing twenty-one cartridge filters). From the cartridge filters water will spilt into two treatment trains, each train will consist of the following. Two carbon vessels plumbed in parallel each carbon vessel will contain 5,000 pounds of reactivated liquid-phase carbon, followed by one cation media vessel and then one anion media vessel plumbed in series each containing 100 cubic feet of resin. Discharge from the resin vessels will pass through a flow/totalizer meter prior to discharge into Ten Mile River. The discharge will be at one location (Discharge Location 1) as depicted on **Figure 2**. Effluent sampling will correspond with this discharge location.

Source water will be pumped to an additional water treatment system, if required, rated for 250 gpm. Source water will enter one 21,000-gallon frac tank, at the head of the system, water will be treated with LRT E50 coagulant and LRT 823 flocculant inside the frac tank. From the frac tank water will flow to one 18,000-gallon weir tank. From the weir tank water will be pumped to a multi-bag filter skid (made up of two multi bag filter housings each housing containing six bag filters), followed by two dual cartridge filter skids plumed in parallel (each skid will be made up of two cartridge housings each housing containing twenty-one cartridge filters). From the cartridge filters water will enter Two carbon vessels plumbed in parallel each carbon vessel will contain 5,000 pounds of reactivated liquid-phase carbon,

followed by one cation media vessel and then one anion media vessel plumbed in series each containing 100 cubic feet of resin. Discharge from the resin vessels will pass through a flow/totalizer meter prior to discharge into Mire Brook a tributary of the Ten Mile River. The discharge will be at one location (Discharge Location 2) as depicted on **Figure 2**. Effluent sampling will correspond with this discharge location.

#### **Chemical and Additive Information**

Based on groundwater samples collected from the site and in order to meet the expected effluent limitations, the following chemicals and additives have been proposed for the treatment system: chemical aided settling system through coagulants/flocculants. Product names, chemical formulas, manufacturer information and Chemical Abstract Services (CAS) registry numbers have been provided on Safety Data Sheets (SDSs) included in **Appendix D**.

The Chemical aided settling system will be added in two parts, the coagulating (LRT-E-50) will be injected into the influent stream prior to entering the frac tanks while the flocculant (LRT-823) will be added directly into the frac tanks. The coagulant and flocculant continually dose as dewatering activities occur at the maximum dosage rate of 25 parts per million (ppm). Although dosage rate for the coagulant and flocculant will be 25ppm, the detected concentration in the post bag filter (carryover) has been recorded in the parts per trillion (ppt) range, (about 6 order of magnitude less than the dosing concentration). This is because nearly all the chemical becomes incorporated in the sludge and removed from the waste stream as solids from the frac and weir tanks.

The addition of chemical aided settling system chemicals will not add any pollutant in contractions which exceed permit effluent limitations, will not exceed any applicable water quality standard, and will not add any pollutants that would be justify the application of permit conditions that different from or absent in this permit.

### **Consultation with Federal Services**

LRT reviewed online electronic data viewers and databases from the Massachusetts Geographical Information System (MassGIS), the Massachusetts Division of Fisheries and Wildlife (MassWildlife; Natural Heritage and Endangered Species Program), and the U.S. National Parks Service Natural Historic Places (NPS). Based on this review, the Site and the point where the proposed discharge reaches the receiving surface water body are not located within an Area of Critical Environmental Concern (ACEC). The Site and the proposed discharge point are not located within Habitats of Rare Wetland Wildlife, Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or listed as a National Historic Place. Documentation 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. On behalf of Charter Contracting Company we are requesting coverage under the NPDES RGP for the discharge of

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treated wastewater to the Ten Mile River in support of construction remediation dewatering activities that are to take place at Liberty Utilities.

The enclosed NOI form provides required information on the general site conditions, discharge, treatment system, receiving water, and consultation with federal services. For this project, Charter is considered the Operator and has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications.

Please feel free to contact us at 774-450-7177 if you have any questions or if you require additional information.

Sincerely,

Lockwood Remediation Technologies, LLC

Jacob Jennings

Jacob Jennings Staff Scientist Kim Gravelle R.G.

Kim Gravelle, P.G. Senior Project Manager

Encl: Figure 1 - Locus Plan

Figure 2 - Site Plan

Figure 3 - Water Treatment System Schematic

Appendix A - NOI Form Appendix B - Laboratory Data

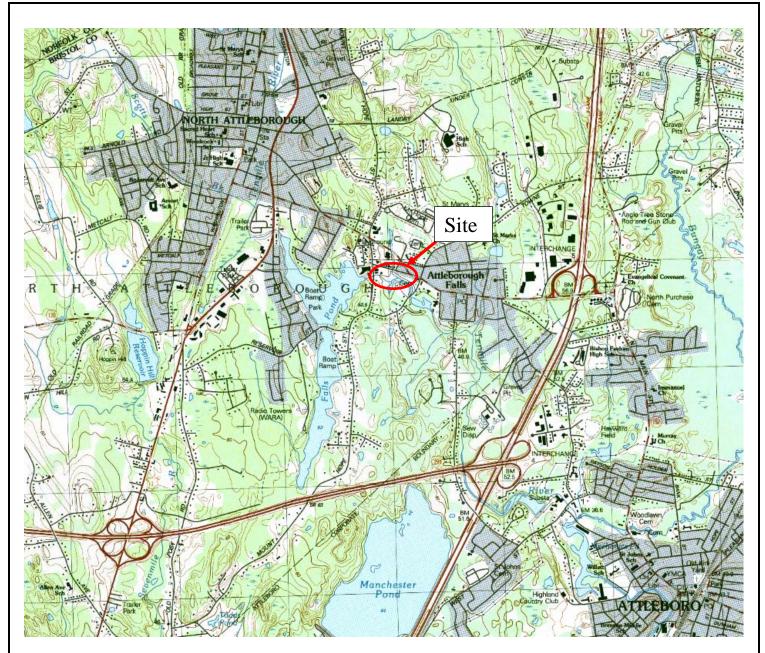
Appendix C - Water Treatment System Appendix D - Safety Data Sheets Appendix E - Supplemental Information

cc: Cathy Vakalopoulos – Mass DEP

Kyle Merkosky – Charter Contracting Company

Derek Tomka – Liberty Utilities Corp.





Source: MassGIS Oliver



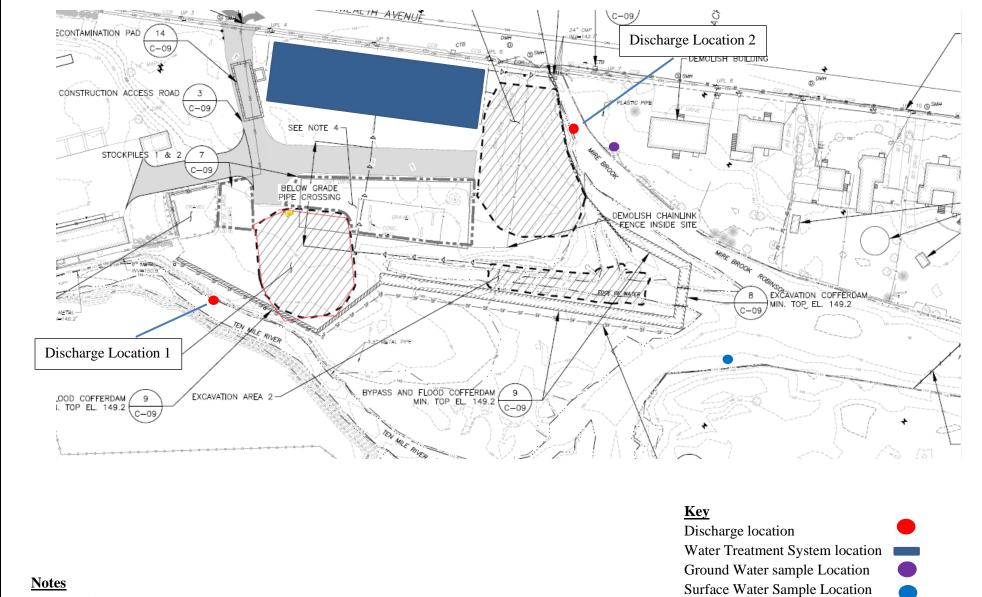
### **Notes**

1. Figure is not to scale.



89 Crawford Street Leominster, Massachusetts 01453 Tel: 774.450.7177

Tel: 774.450.7177 Fax: 888.835.0617 www.lrt-llc.net **Figure 1 – Locus Plan**Liberty Utilities
61 Commonwealth Ave.
North Attleborough, MA



1. Figure is not to scale

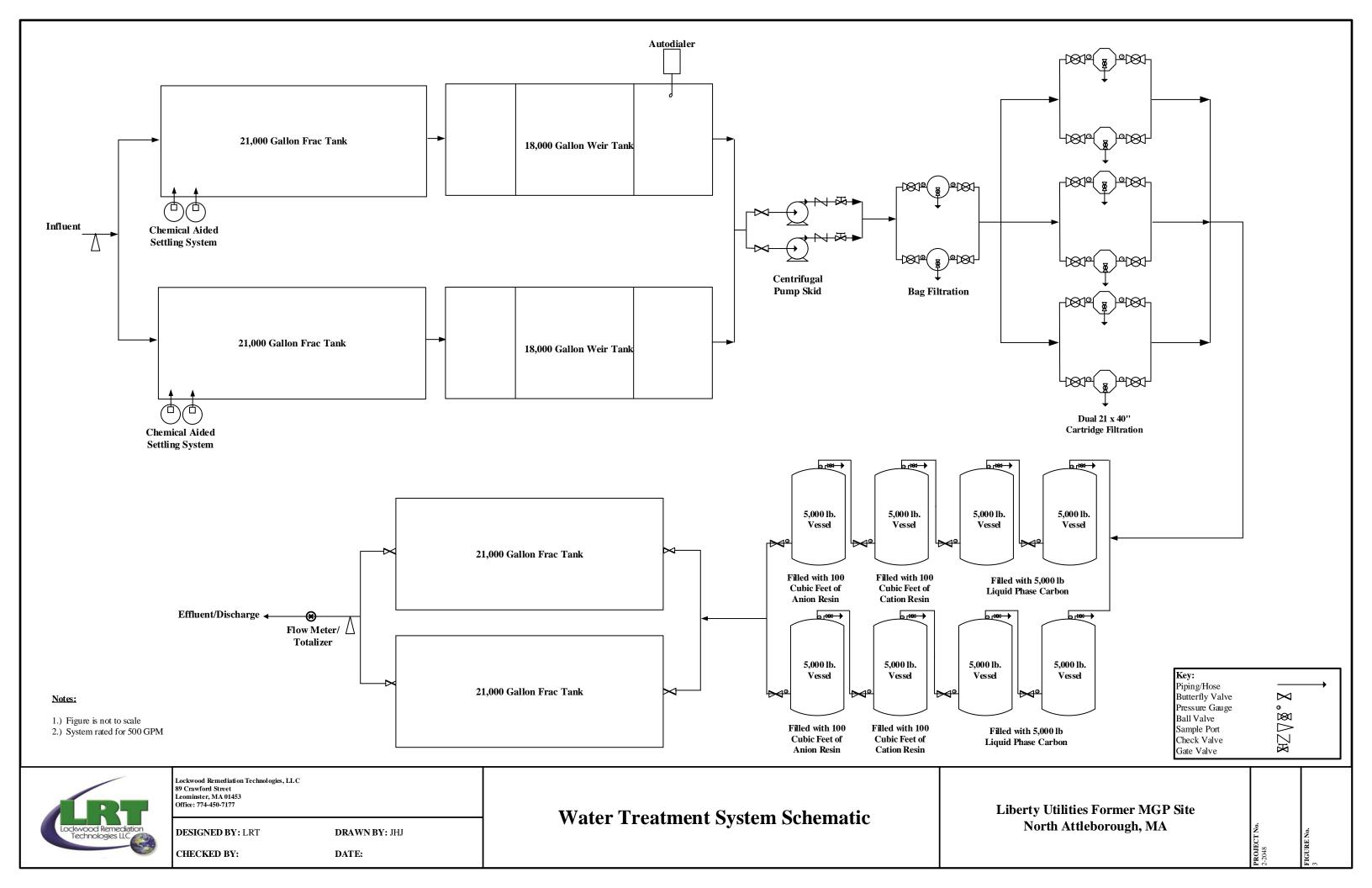


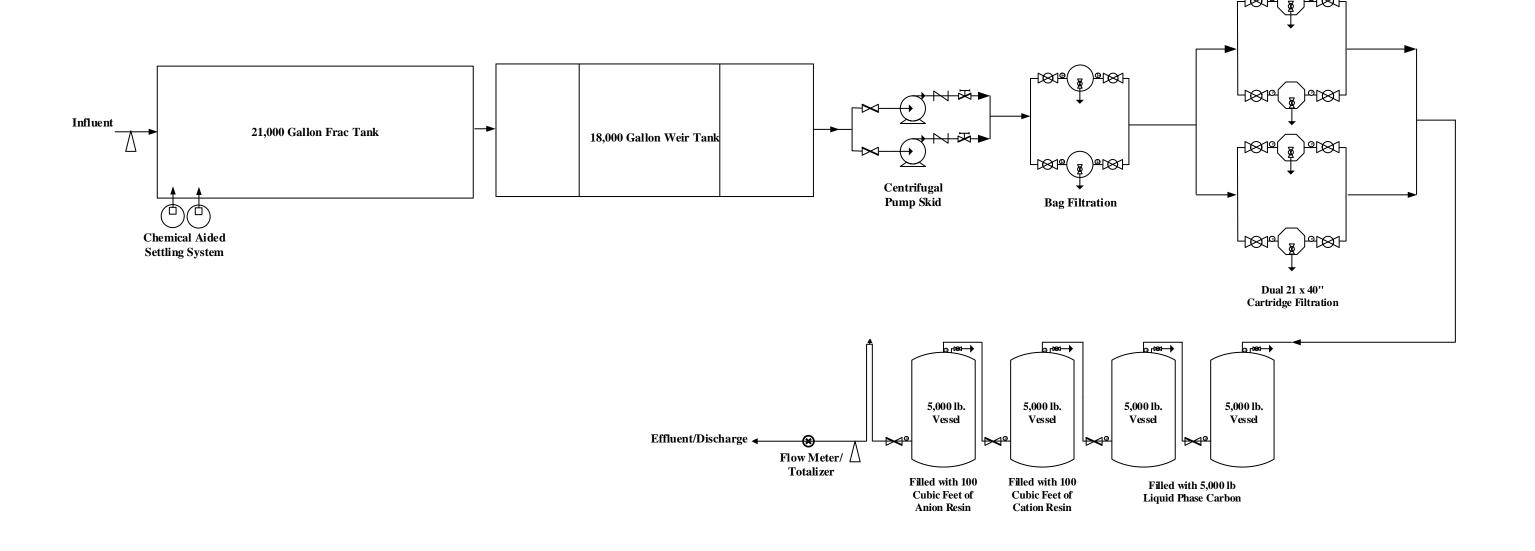
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Fax: 888.835.0617 www.lrt-llc.net

## Figure 2: Site Plan Liberty Utilities

61 Commonwealth Ave. North Attleborough, MA





#### Notes:

- 1.) Figure is not to scale
- 2.) System rated for 250 GPM

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

**DESIGNED BY:** LRT

DRAWN BY: JHJ

CHECKED BY:

DATE:

# **Water Treatment System Schematic**

**Liberty Utilities Former MGP Site** North Attleborough, MA



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

# A. General site information:

1. Name of site:	Site address:						
	Street:						
	City:		State:	Zip:			
2. Site owner	Contact Person:						
	Telephone:	Email:					
	Mailing address:						
	Street:						
Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private ☐ Other; if so, specify:	City:		State:	Zip:			
3. Site operator, if different than owner	Contact Person:						
	Telephone:						
	Mailing address:						
	Street:						
	City:		State:	Zip:			
4. NPDES permit number assigned by EPA:	5. Other regulatory program(s) that apply to the site (check all that apply):						
	☐ MA Chapter 21e; list RTN(s): ☐ CERC		CLA				
NPDES permit is (check all that apply: $\square$ RGP $\square$ DGP $\square$ CGP	NIII Carra danata a Managamant Danait an		☐ UIC Program				
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Groundwater Release Detection Permit:	□ POTW Pretreatment					
	☐ CWA Section 404						

В.	<b>Receiving water information:</b>	:
1 N	lame of receiving water(s).	

1. Name of receiving water(s):	Name of receiving water(s):  Waterbody identification of receiving water(s):  C									
Receiving water is (check any that apply): $\Box$ Outstar	nding Resource Water □ Ocean Sanctuary □ territor	rial sea □ Wild and Scenic R	iver							
2. Has the operator attached a location map in accord	lance with the instructions in B, above? (check one)	: □ Yes □ No								
Are sensitive receptors present near the site? (check of If yes, specify:	one): □ Yes □ No									
3. Indicate if the receiving water(s) is listed in the Stapollutants indicated. Also, indicate if a final TMDL in 4.6 of the RGP.										
	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.									
5. Indicate the requested dilution factor for the calculaccordance with the instructions in Appendix V for s										
6. Has the operator received confirmation from the a If yes, indicate date confirmation received:	ppropriate State for the 7Q10and dilution factor indi	cated? (check one): ☐ Yes ☐	l No							
7. Has the operator attached a summary of receiving	water sampling results as required in Part 4.2 of the	RGP in accordance with the	instruction in Appendix VIII?							
(check one): ☐ Yes ☐ No										
C. Source water information:										
1. Source water(s) is (check any that apply):										
☐ Contaminated groundwater	☐ Contaminated surface water	☐ The receiving water	☐ Potable water; if so, indicate municipality or origin:							
Has the operator attached a summary of influent	Has the operator attached a summary of influent	☐ A surface water other								
sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one):	sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one):	than the receiving water; if so, indicate waterbody:	☐ Other; if so, specify:							
□ Yes □ No	□ Yes □ No									

2. Source water contaminants:							
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in	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						
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.	with the instructions in Appendix VIII? (check one): □ Yes □ No						
3. Has the source water been previously chlorinated or otherwise contains resid	dual chlorine? (check one): □ Yes □ No						
D. Discharge information							
1.The discharge(s) is a(n) (check any that apply): $\Box$ Existing discharge $\Box$ New	w discharge □ New source						
Outfall(s):	Outfall location(s): (Latitude, Longitude)						
Discharges enter the receiving water(s) via (check any that apply): □ Direct di	scharge to the receiving water $\Box$ 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 sew	ver system:						
Has notification been provided to the owner of this system? (check one): ☐ Ye	•						
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							

### 4. Influent and Effluent Characteristics

	Known	Known		<b>75</b> 5 4	<b>5</b>	Infl	uent	Effluent Lir	nitations
Parameter	or believed absent	or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia								Report mg/L	
Chloride								Report µg/l	
Total Residual Chlorine								0.2 mg/L	
Total Suspended Solids								30 mg/L	
Antimony								206 μg/L	
Arsenic								104 μg/L	
Cadmium								10.2 μg/L	
Chromium III								323 μg/L	
Chromium VI								323 μg/L	
Copper								242 μg/L	
Iron								5,000 μg/L	
Lead								160 μg/L	
Mercury								0.739 μg/L	
Nickel								1,450 μg/L	
Selenium								235.8 μg/L	
Silver								35.1 μg/L	
Zinc								420 μg/L	
Cyanide								178 mg/L	
B. Non-Halogenated VOCs	3								
Total BTEX								100 μg/L	
Benzene								5.0 μg/L	
1,4 Dioxane								200 μg/L	
Acetone								7.97 mg/L	
Phenol								1,080 µg/L	

	Known	Known	_	<b>D</b>	Inf	luent	Effluent Lin	nitations
Parameter	or # of Test Detection	Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL			
C. Halogenated VOCs								
Carbon Tetrachloride							4.4 μg/L	
1,2 Dichlorobenzene							600 μg/L	
1,3 Dichlorobenzene							320 μg/L	
1,4 Dichlorobenzene							5.0 μg/L	
Total dichlorobenzene							763 µg/L in NH	
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	
cis-1,2 Dichloroethylene							70 μg/L	
Vinyl Chloride							2.0 μg/L	
D. Non-Halogenated SVO	Cs							
Total Phthalates							190 μg/L	
Diethylhexyl phthalate							101 μg/L	
Total Group I PAHs							1.0 μg/L	
Benzo(a)anthracene							_	
Benzo(a)pyrene							_	
Benzo(b)fluoranthene							_	
Benzo(k)fluoranthene							As Total PAHs	
Chrysene							_	
Dibenzo(a,h)anthracene							_	
Indeno(1,2,3-cd)pyrene								

	Known	Known				Inf	luent	Effluent Lin	nitations
Parameter	or believed absent	or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs								100 μg/L	
Naphthalene								20 μg/L	
E. Halogenated SVOCs									
Total PCBs								0.000064 µg/L	
Pentachlorophenol								1.0 μg/L	
	1			•					
F. Fuels Parameters Total Petroleum		1	1	1		1 1			
Hydrocarbons								5.0 mg/L	
Ethanol								Report mg/L	
Methyl-tert-Butyl Ether								70 μg/L	
tert-Butyl Alcohol								120 μg/L in MA 40 μg/L in NH	
tert-Amyl Methyl Ether								90 μg/L in MA 140 μg/L in NH	
Other (i.e., pH, temperatur	re, hardness,	salinity, LC	50, addition	al pollutar	ats present);	if so, specify:			

# E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)					
□ Adsorption/Absorption □ Advanced Oxidation Processes □ Air Stripping □ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption					
☐ Ion Exchange ☐ Precipitation/Coagulation/Flocculation ☐ Separation/Filtration ☐ Other; if so, specify:					
2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.					
Identify each major treatment component (check any that apply):					
□ Fractionation tanks□ Equalization tank □ Oil/water separator □ Mechanical filter □ Media filter					
☐ Chemical feed tank ☐ Air stripping unit ☐ Bag filter ☐ Other; if so, specify:					
Indicate if either of the following will occur (check any that apply):					
□ Chlorination □ De-chlorination					
3. Provide the <b>design flow capacity</b> in gallons per minute (gpm) of the most limiting component.					
Indicate the most limiting component:					
Is use of a flow meter feasible? (check one): $\square$ Yes $\square$ No, if so, provide justification:					
Provide the proposed maximum effluent flow in gpm.					
Trovide the proposed maximum errident now in gpin.					
Provide the average effluent flow in gpm.					
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:					
4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ☐ Yes ☐ No					

### F. Chemical and additive information

r. 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:
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): $\square$ Yes $\square$ 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:
□ <b>FWS Criterion A</b> : 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".
□ <b>FWS Criterion B</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
□ <b>FWS Criterion C</b> : 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) $\square$ the operator $\square$ EPA $\square$ Other; if so, specify:

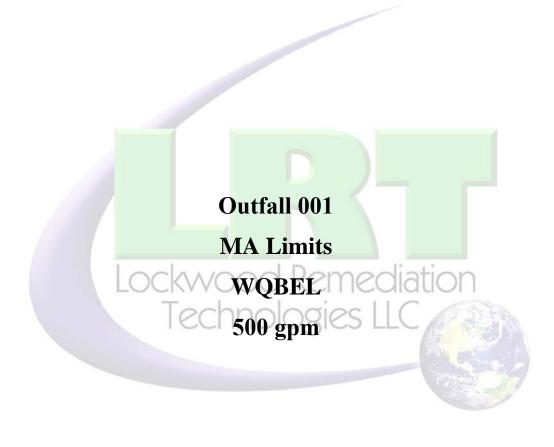
□ <b>NMFS Criterion</b> : A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will 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): $\square$ Yes $\square$ 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:
□ <b>Criterion A</b> : 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.
□ <b>Criterion C</b> : 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): $\square$ Yes $\square$ No
I. Supplemental information
Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.
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 a that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and b no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are information, including the possibility of fine and imprisonment for knowing violations.	persons who manage the system, or those elief, true, accurate, and complete. I have
BMPP certification statement:	
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	Check one: Yes □ No □ NA □
discharges, including a copy of this NOI, if requested.  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 $\square$ No $\square$ NA $\square$
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge	
$permit(s). \ Additional \ discharge \ permit \ is \ (check \ one): \ \Box \ RGP \ \Box \ DGP \ \Box \ CGP \ \Box \ MSGP \ \ \Box \ Individual \ NPDES \ permit$	Check one: Yes $\square$ No $\square$ NA $\square$
☐ Other; if so, specify:	
Signature: Paul J Leofanti Jr Dat	te:
Print Name and Title:	

### Water Treatment System Flow Rates Liberty Utilities North Attleborough, MA

Water Treatment System	Design Flow Rate (gpm)	Maximum Flow Rate (gpm)	Average Flow Rate (gpm)	7Q10 (cfs)	Requested Dilution Factor
Water Treatment System #1 (Outfall 001)	500	500	350	0.328	1.29
Water Treatment System #2 (Outfall 002)	250	250	250	0.0087	1.02



### Enter number values in green boxes below

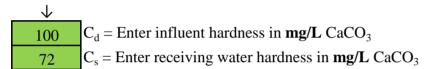
Enter values in the units specified

$\downarrow$	
0.382	$Q_R = Enter upstream flow in MGD$
0.72	$Q_P = Enter discharge flow in MGD$
0	Downstream 7Q10

Enter a dilution factor, if other than zero



Enter values in the units specified



Enter receiving water concentrations in the units specified

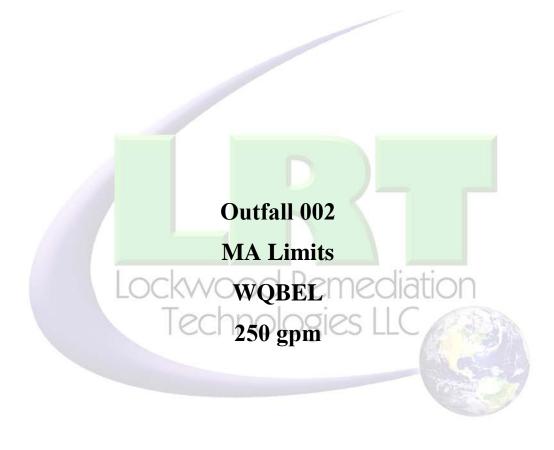
$\downarrow$	
6.9	pH in <b>Standard Units</b>
13.8	Temperature in °C
0.2	Ammonia in <b>mg/L</b>
72	Hardness in <b>mg/L</b> CaCO <sub>3</sub>
0	Salinity in <b>ppt</b>
0	Antimony in <b>μg/L</b>
1.4	Arsenic in <b>μg/L</b>
0.33	Cadmium in <b>µg/L</b>
4.7	Chromium III in µg/L
0	Chromium VI in <b>µg/L</b>
15	Copper in <b>µg/L</b>
4800	Iron in μg/L
15	Lead in <b>μg/L</b>
0	Mercury in <b>μg/L</b>
0	Nickel in <b>μg/L</b>
0	Selenium in <b>μg/L</b>
0.32	Silver in <b>μg/L</b>
43	Zinc in <b>µg/L</b>

# Enter **influent** concentrations in the units specified

$\bot$	_
0	TRC in <b>µg/L</b>
6.3	Ammonia in <b>mg/L</b>
0	Antimony in <b>μg/L</b>
0	Arsenic in <b>μg/L</b>
0	Cadmium in <b>µg/L</b>
1.1	Chromium III in µg/L
0	Chromium VI in <b>µg/L</b>
1.1	Copper in <b>µg/L</b>
21000	Iron in μg/L
0	Lead in <b>µg/L</b>
0	Mercury in µg/L
0	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
0	Zinc in µg/L
0	Cyanide in <b>µg/L</b>
0	Phenol in µg/L
0	Carbon Tetrachloride in µg/L
0	Tetrachloroethylene in µg/L
0	Total Phthalates in µg/L
0	Diethylhexylphthalate in µg/L
0.33	Benzo(a)anthracene in µg/L
0.11	Benzo(a)pyrene in µg/L
0.13	Benzo(b)fluoranthene in µg/L
0.043	Benzo(k)fluoranthene in µg/L
0.22	Chrysene in µg/L
0	Dibenzo(a,h)anthracene in μg/L
0.062	Indeno(1,2,3-cd)pyrene in μg/L
0	Methyl-tert butyl ether in μg/L

A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded	
Ammonia	Report	mg/L		
Chloride	Report	μg/L		
Total Residual Chlorine	0.2	mg/L	17	μg/L
Total Suspended Solids	30	mg/L		μg/L
Antimony	206	_	980	u a/I
Arsenic		μg/L	15	μg/L
	104	μg/L		μg/L
Cadmium	10.2	μg/L	0.2509	μg/L
Chromium III	323	μg/L	118.8	μg/L
Chromium VI	323	$\mu g/L$	17.5	μg/L
Copper	242	$\mu g/L$	8.5	$\mu g/L$
Iron	5000	μg/L	1000	μg/L
Lead	160	μg/L	2.79	μg/L
Mercury	0.739	μg/L	1.39	μg/L
Nickel	1450	μg/L	73.2	μg/L
Selenium	235.8	μg/L μg/L	7.7	μg/L
Silver	35.1	μg/L	4.7	μg/L
Zinc	420	μg/L μg/L	145.4	μg/L
Cyanide	178	mg/L	8.0	μg/L
B. Non-Halogenated VOCs	170	mg/L	8.0	μg/L
Total BTEX	100	μg/L		
Benzene	5.0	μg/L		
1,4 Dioxane	200	μg/L		
Acetone	7970	μg/L		
Phenol	1,080	$\mu g/L$	459	$\mu g/L$
C. Halogenated VOCs				
Carbon Tetrachloride	4.4	$\mu$ g/L	2.4	$\mu g/L$
1,2 Dichlorobenzene	600	$\mu g/L$		
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	<del></del>	
Tetrachloroethylene	5.0	μg/L	5.1	μg/L
cis-1,2 Dichloroethylene	70	μg/L		

Vinyl Chloride	2.0	$\mu g/L$		
D. Non-Halogenated SVOCs				
Total Phthalates	190	μg/L		μg/L
Diethylhexyl phthalate	101	μg/L	3.4	$\mu g/L$
Total Group I Polycyclic				
Aromatic Hydrocarbons	1.0	μg/L		
Benzo(a)anthracene	1.0	μg/L	0.0058	$\mu g/L$
Benzo(a)pyrene	1.0	μg/L	0.0058	$\mu g/L$
Benzo(b)fluoranthene	1.0	μg/L	0.0058	$\mu g/L$
Benzo(k)fluoranthene	1.0	μg/L	0.0058	$\mu g/L$
Chrysene	1.0	μg/L	0.0058	$\mu g/L$
Dibenzo(a,h)anthracene	1.0	μg/L	0.0058	$\mu g/L$
Indeno(1,2,3-cd)pyrene	1.0	μg/L	0.0058	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		
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	31	$\mu g/L$
tert-Butyl Alcohol	120	μg/L		
tert-Amyl Methyl Ether	90	$\mu g/L$		



### Enter number values in green boxes below

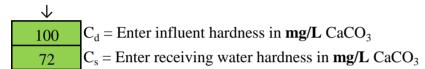
Enter values in the units specified

$\downarrow$	
0.382	$Q_R = Enter upstream flow in MGD$
0.36	$Q_P = Enter discharge flow in MGD$
0	Downstream 7Q10

Enter a dilution factor, if other than zero



Enter values in the units specified



Enter receiving water concentrations in the units specified

$\downarrow$	
6.9	pH in <b>Standard Units</b>
13.8	Temperature in °C
0.2	Ammonia in <b>mg/L</b>
72	Hardness in <b>mg/L</b> CaCO <sub>3</sub>
0	Salinity in <b>ppt</b>
0	Antimony in <b>μg/L</b>
1.4	Arsenic in <b>μg/L</b>
0.33	Cadmium in <b>µg/L</b>
4.7	Chromium III in µg/L
0	Chromium VI in <b>µg/L</b>
15	Copper in <b>µg/L</b>
4800	Iron in μg/L
15	Lead in <b>μg/L</b>
0	Mercury in <b>μg/L</b>
0	Nickel in <b>μg/L</b>
0	Selenium in <b>μg/L</b>
0.32	Silver in <b>μg/L</b>
43	Zinc in <b>µg/L</b>

# Enter **influent** concentrations in the units specified

$\bot$	_
0	TRC in <b>µg/L</b>
6.3	Ammonia in <b>mg/L</b>
0	Antimony in <b>μg/L</b>
0	Arsenic in <b>μg/L</b>
0	Cadmium in <b>µg/L</b>
1.1	Chromium III in µg/L
0	Chromium VI in <b>µg/L</b>
1.1	Copper in <b>µg/L</b>
21000	Iron in μg/L
0	Lead in <b>µg/L</b>
0	Mercury in µg/L
0	Nickel in µg/L
0	Selenium in µg/L
0	Silver in µg/L
0	Zinc in µg/L
0	Cyanide in <b>µg/L</b>
0	Phenol in µg/L
0	Carbon Tetrachloride in µg/L
0	Tetrachloroethylene in µg/L
0	Total Phthalates in µg/L
0	Diethylhexylphthalate in µg/L
0.33	Benzo(a)anthracene in µg/L
0.11	Benzo(a)pyrene in µg/L
0.13	Benzo(b)fluoranthene in µg/L
0.043	Benzo(k)fluoranthene in µg/L
0.22	Chrysene in µg/L
0	Dibenzo(a,h)anthracene in μg/L
0.062	Indeno(1,2,3-cd)pyrene in μg/L
0	Methyl-tert butyl ether in μg/L

A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded	
Ammonia	Report	mg/L		
Chloride	Report	μg/L		
Total Residual Chlorine	0.2	mg/L	23	μg/L
Total Suspended Solids	30	mg/L		F6 2
Antimony	206	μg/L	1319	μg/L
Arsenic	104		19	
Cadmium		μg/L	0.2411	μg/L
	10.2	μg/L		μg/L
Chromium III	323	μg/L	151.4	μg/L
Chromium VI	323	μg/L	23.6	μg/L
Copper	242	μg/L	8.2	μg/L
Iron	5000	$\mu g/L$	1000	$\mu g/L$
Lead	160	$\mu g/L$	2.61	$\mu g/L$
Mercury	0.739	μg/L	1.87	μg/L
Nickel	1450	μg/L	94.2	μg/L
Selenium	235.8	μg/L	10.3	μg/L
Silver	35.1	μg/L	5.6	μg/L
Zinc	420	μg/L	170.8	μg/L
Cyanide	178	mg/L	10.7	μg/L
B. Non-Halogenated VOCs		8		1.0
Total BTEX	100	μg/L		
Benzene	5.0	μg/L		
1,4 Dioxane	200	μg/L		
Acetone	7970	$\mu g/L$		
Phenol	1,080	$\mu g/L$	618	$\mu g/L$
C. Halogenated VOCs				
Carbon Tetrachloride	4.4	μg/L	3.3	μg/L
1,2 Dichlorobenzene	600	μg/L		
1,3 Dichlorobenzene	320	μg/L		
1,4 Dichlorobenzene	5.0	μg/L		
Total dichlorobenzene	 70	μg/L		
<ul><li>1,1 Dichloroethane</li><li>1,2 Dichloroethane</li></ul>	5.0	μg/L		
1,1 Dichloroethylene	3.2	μg/L μg/L		
Ethylene Dibromide	0.05	μg/L μg/L		
Methylene Chloride	4.6	μg/L μg/L		
1,1,1 Trichloroethane	200	μg/L μg/L		
1,1,2 Trichloroethane	5.0	μg/L μg/L		
Trichloroethylene	5.0	μg/L		
Tetrachloroethylene	5.0	μg/L	6.8	μg/L
cis-1,2 Dichloroethylene	70	μg/L		

Vinyl Chloride	2.0	$\mu g/L$		
D. Non-Halogenated SVOCs				
Total Phthalates	190	μg/L		μg/L
Diethylhexyl phthalate	101	μg/L	4.5	$\mu g/L$
Total Group I Polycyclic				
Aromatic Hydrocarbons	1.0	μg/L		
Benzo(a)anthracene	1.0	μg/L	0.0078	$\mu g/L$
Benzo(a)pyrene	1.0	μg/L	0.0078	$\mu g/L$
Benzo(b)fluoranthene	1.0	μg/L	0.0078	$\mu g/L$
Benzo(k)fluoranthene	1.0	μg/L	0.0078	$\mu g/L$
Chrysene	1.0	μg/L	0.0078	$\mu g/L$
Dibenzo(a,h)anthracene	1.0	μg/L	0.0078	$\mu g/L$
Indeno(1,2,3-cd)pyrene	1.0	μg/L	0.0078	$\mu g/L$
Total Group II Polycyclic				
Aromatic Hydrocarbons	100	μg/L		
Naphthalene	20	μg/L		
E. Halogenated SVOCs				
Total Polychlorinated Biphenyls	0.000064	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	41	$\mu g/L$
tert-Butyl Alcohol	120	μg/L		
tert-Amyl Methyl Ether	90	μg/L		



From: Ruan, Xiaodan (DEP)
To: Jake Jennings

 Cc:
 Vakalopoulos, Catherine (DEP)

 Subject:
 Re: Dilution Calcs Liberty Utilities

 Date:
 Friday, June 26, 2020 10:55:47 AM

Attachments: <u>image001.png</u>

Hi Jake,

I can confirm that for the second treatment system with the second outfall to Mire Brook at the same site, the 7Q10 of 0.0087 cfs and the dilution factor of 1.02 using a design flow of 250 gpm are correct.

The water quality information for Ten Miles River should apply to the second outfall as well because the Ten Mile River is the next waterbody that has a segment ID.

Also I would like to include the information for application again to make sure it is clear:

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).

Regarding the MassDEP application, on June 30th we will be transitioning to an online application submittal process where you will set up a user ID and be able to submit NOIs for various projects as well as pay by credit card. We anticipate that at first there will be a learning curve for both users and permitting staff but technical support will be available. You will know when the system has gone "live" when the instructions change on this page: <a href="https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent">https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent</a>.

Please let me know if you have any other questions.

Thanks, Xiaodan

From: Jake Jennings < JJennings@Irt-Ilc.net> Sent: Thursday, June 25, 2020 2:26 PM

**To:** Ruan, Xiaodan (DEP)

**Cc:** Vakalopoulos, Catherine (DEP)

**Subject:** RE: Dilution Calcs Liberty Utilities

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Xiaodan,

Thank you for sending that information over. We will have a second treatment system rated for 250 gpm that will be discharging to a second outfall at the site. The outfall is in Mire Brook which is a tributary of the Ten Mile River.

I've attached our dilution calcs for your review.

The 7 Day 10 Year Low Flow value from the streamstats report is 0.0087 cfs and the calculated dilution factor is 1.02.

Can you please confirm these values are appropriate.

Thank you,

Jake Jennings

From: Ruan, Xiaodan (DEP) <xiaodan.ruan@state.ma.us>

**Sent:** Thursday, June 18, 2020 3:28 PM **To:** Jake Jennings < JJennings@lrt-llc.net>

**Cc:** Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>

**Subject:** Re: Dilution Calcs Liberty Utilities

Hi Jake,

I would like to also let you know that MassDEP will be transitioning to a new online application system at the end of June/early July. You will know when this happens when the instructions at <a href="https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent">https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent</a> describe how to use the ePlace system.

Thanks, Xiaodan

From: Ruan, Xiaodan (DEP)

**Sent:** Tuesday, June 16, 2020 5:17 PM

**To:** Jake Jennings

**Cc:** Vakalopoulos, Catherine (DEP)

**Subject:** Re: Dilution Calcs Liberty Utilities

Thanks, Jake, for the clarification.

I can confirm that the 7Q10, 0.328 cfs (0.212 MGD), and the dilution factor 1.29, using a design flow rate (maximum flow rate) of 500 gpm (0.72 MGD) for the project at 61 Commonwealth Ave, North Attleborough, MA are correct.

Here is some information to use in the NOI:

Waterbody ID: MA52-02 (within Ten Mile River Watershed)

Classification: B

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-

<u>list-report.pdf</u>, search for "MA52-02" to see the causes of impairments.

TMDLs: there is no TMDL for this segment

Also, if this is not a *current* MCP site then in addition to submitting the NOI to EPA (and ccing Cathy electronically), you need to submit a transmittal form to MassDEP and submit a \$500 fee (unless fee exempt, e.g. municipality). The instructions are located here: <a href="https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent">https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent</a>. Please also send a copy of the transmittal form to Cathy, or include it in the NOI.

Please let me know if you have any questions.

Thanks, Xiaodan

From: Jake Jennings < JJennings@Irt-Ilc.net > Sent: Tuesday, June 16, 2020 4:38 PM

**To:** Ruan, Xiaodan (DEP)

**Cc:** Vakalopoulos, Catherine (DEP)

**Subject:** RE: Dilution Calcs Liberty Utilities

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Xiaodan,

We are in discharging to the Ten Mile River. I've attached a site plan to better depict where we are proposing to discharge.

Thank you,

Jake

**From:** Ruan, Xiaodan (DEP) < <u>xiaodan.ruan@state.ma.us</u>>

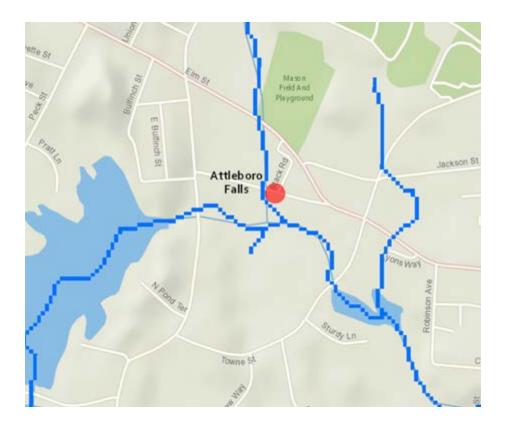
**Sent:** Tuesday, June 16, 2020 4:32 PM **To:** Jake Jennings <a href="mailto:Jennings@lrt-llc.net">Jennings@lrt-llc.net</a>>

**Cc:** Vakalopoulos, Catherine (DEP) < <a href="mailto:catherine.vakalopoulos@state.ma.us">catherine.vakalopoulos@state.ma.us</a>>

**Subject:** Re: Dilution Calcs Liberty Utilities

Hi Jake,

Could you please confirm that if the discharge goes to the Ten Mile River or the tributary that flows to the Ten Mile River? The red dot in the screenshot below is the site location you provided.



Thanks, Xiaodan

From: Jake Jennings <a href="mailto:JJennings@lrt-llc.net">JJennings@lrt-llc.net</a>
Sent: Tuesday, June 16, 2020 7:51 AM
To: Vakalopoulos, Catherine (DEP)

**Cc:** Ruan, Xiaodan (DEP)

**Subject:** Dilution Calcs Liberty Utilities

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Cathy,

Please see attached streamstats report along with our dilution calcs for your review and confirmation.

The project:

The receiving water is the Ten Mile River (MA52-03) which runs through the site Liberty Utilities
61 Commonwealth Ave
North Attleborough, MA

The 7 Day 10 Year Low Flow value from the streamstats report is 0.382 cfs and the calculated dilution factor is 1.29.

Can you please confirm these values are appropriate.

Thank you,

Jake Jennings

### Lockwood Remediation Technologies, LLC

89 Crawford Street Leominster, MA 01453 O: 774.450.7177 F: 888.835.0617

M: 978.751.5431 jjennings@lrt-llc.net 6/11/2020 StreamStats

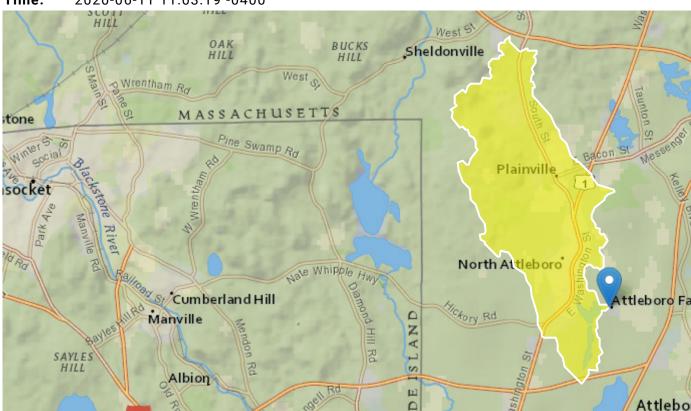
# **StreamStats Report**

Region ID: MA

Workspace ID: MA20200611150302279000

Clicked Point (Latitude, Longitude): 41.97063, -71.31711

Time: 2020-06-11 11:03:19 -0400



Basin Characterist	tics		
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.34	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.312	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.18	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

6/11/2020 StreamStats

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.34	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.312	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.18	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	SEp
7 Day 2 Year Low Flow	0.801	ft^3/s	0.309	2	49.5	49.5
7 Day 10 Year Low Flow	0.328	ft^3/s	0.0975	1.03	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.3.11



# DILUTION CALCULATIONS Liberty Utilities North Attleborough, MA

Calculate Dilution Factor (DF) for project based on 7 Day 10 Year (7Q10) Low Flow values

Calculate DF based on EPA formula  $(Q_S + Q_D)/Q_D$ , where  $Q_S$  is 7Q10 in million gallons per day (MGD) and  $Q_D$  is discharge flow in MGD

#### ASSUMPTIONS FOR 500 GPM SYSTEM

7Q10 is 0.382 cubic feet per second (cfs) - from StreamStats 4.0 A conversion of 7.48 is used to convert cubic feet to gallons A design flow rate of 500 gallons per minute (gpm) is assumed

### **CALCULATIONS**

7q10 Low Flow Value (Q<sub>s</sub>)

6/25/2020 StreamStats

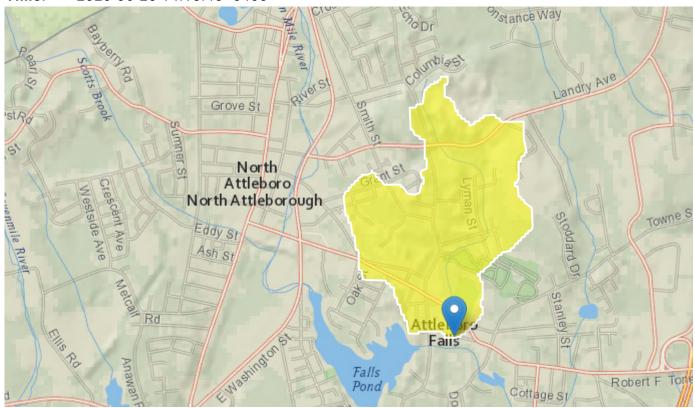
# **StreamStats Report**

Region ID: MA

Workspace ID: MA20200625181827940000

Clicked Point (Latitude, Longitude): 41.97125, -71.31633

Time: 2020-06-25 14:18:48 -0400



Parameter			
Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.54	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.001	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.18	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

6/25/2020 StreamStats

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.54	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.001	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.18	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0289	ft^3/s
7 Day 10 Year Low Flow	0.00867	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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# DILUTION CALCULATIONS Liberty Utilities North Attleborough, MA

Calculate Dilution Factor (DF) for project based on 7 Day 10 Year (7Q10) Low Flow values

Calculate DF based on EPA formula  $(Q_S + Q_D)/Q_D$ , where  $Q_S$  is 7Q10 in million gallons per day (MGD) and  $Q_D$  is discharge flow in MGD

#### ASSUMPTIONS FOR 250 GPM SYSTEM

7Q10 is 0.0087 cubic feet per second (cfs) - from StreamStats 4.0 A conversion of 7.48 is used to convert cubic feet to gallons A design flow rate of 250 gallons per minute (gpm) is assumed

### **CALCULATIONS**

7q10 Low Flow Value (Q<sub>s</sub>)





June 22, 2020

Kim Gravelle Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453

Project Location: Liberty Utilities

Client Job Number: Project Number: 2-2048

Laboratory Work Order Number: 20F0701

Keny K. Mille

Enclosed are results of analyses for samples received by the laboratory on June 15, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee Project Manager

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REPORT DATE: 6/22/2020



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Lockwood Remediation Technologies, LLC

89 Crawford Street Leominster, MA 01453

ATTN: Kim Gravelle

PURCHASE ORDER NUMBER: 2-2048

PROJECT NUMBER: 2-2048

#### ANALYTICAL SUMMARY

20F0701 WORK ORDER NUMBER:

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Liberty Utilities

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
C61MW-4	20F0701-01	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 350.1	
				EPA 504.1	
				SM21-22 2540D	
				SM21-22 3500 Cr B	
				SM21-22 4500 CL G	
					MA M-MA-086/CT PH-0574/NY11148
				Tri Chrome Calc.	
Receiving Water	20F0701-02	Ground Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 350.1	
				SM21-22 3500 Cr B	
				Tri Chrome Calc.	



#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.



624.1

#### Qualifications:

R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

#### Analyte & Samples(s) Qualified:

20F0701-01[C61MW-4], B260074-MS1, B260074-MSD1

RL-11

Elevated reporting limit due to high concentration of target compounds.

#### Analyte & Samples(s) Qualified:

20F0701-01[C61MW-4]

625.1

#### Qualifications:

L-04

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side. Analyte & Samples(s) Qualified:

#### Hexachlorocyclopentadiene

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1

#### MS-09

Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated. Analyte & Samples(s) Qualified:

#### 2-Chloronaphthalene

20F0701-01[C61MW-4], B260252-MS1, B260252-MSD1

#### Acenaphthene

20F0701-01[C61MW-4], B260252-MS1, B260252-MSD1

## Benzidine

20F0701-01[C61MW-4], B260252-MS1, B260252-MSD1

#### Hexachlorocyclopentadiene

20F0701-01[C61MW-4], B260252-MS1, B260252-MSD1

## MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

#### Analyte & Samples(s) Qualified:

#### 2,4-Dimethylphenol

B260252-MS1, B260252-MSD1

#### 2-Methylnaphthalene

B260252-MS1, B260252-MSD1

#### Naphthalene

B260252-MS1, B260252-MSD1

#### MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:

#### Fluorene

B260252-MS1

#### Phenanthrene

B260252-MS1



#### S-01

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences. Analyte & Samples(s) Qualified:

#### 2,4,6-Tribromophenol

20F0701-01RE2[C61MW-4]

#### 2-Fluorobiphenyl

20F0701-01RE2[C61MW-4]

#### 2-Fluorophenol

20F0701-01RE2[C61MW-4]

#### Nitrobenzene-d5

20F0701-01RE2[C61MW-4]

#### Phenol-d6

20F0701-01RE2[C61MW-4]

#### p-Terphenyl-d14

20F0701-01RE2[C61MW-4]

#### V-04

Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.

Analyte & Samples(s) Qualified:

#### Benzidine

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1, B260252-MS1, B260252-MSD1, S049550-CCV1, B260252-MSD1, B260252-M

#### V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

#### Analyte & Samples(s) Qualified:

#### Benzidine

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1, B260252-MS1, B260252-MSD1, S049550-CCV1

#### Hexachlorocyclopentadiene

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1, B260252-MS1, B260252-MSD1, S049550-CCV1

#### V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

#### Analyte & Samples(s) Qualified:

#### N-Nitrosodimethylamine

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1, B260252-MS1, B260252-MSD1, S049550-CCV1

#### V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is

#### Analyte & Samples(s) Qualified:

20F0701-01[C61MW-4], B260252-BLK1, B260252-BS1, B260252-BSD1, B260252-MS1, B260252-MSD1, S049550-CCV1

SM21-22 4500 CL G

#### Qualifications:

#### MS-08

Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated. Analyte & Samples(s) Qualified:

#### Chlorine, Residual

B260043-MS1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative



Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020 Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01 Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	<152	2000	152	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
tert-Amyl Methyl Ether (TAME)	< 5.60	20.0	5.60	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Benzene	1960	40.0	7.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Bromodichloromethane	<6.40	80.0	6.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Bromoform	<18.4	80.0	18.4	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Bromomethane	<55.2	80.0	55.2	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
tert-Butyl Alcohol (TBA)	<167	800	167	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Carbon Tetrachloride	<4.40	80.0	4.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Chlorobenzene	< 6.00	80.0	6.00	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Chlorodibromomethane	<8.40	80.0	8.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Chloroethane	<14.4	80.0	14.4	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Chloroform	< 6.80	80.0	6.80	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Chloromethane	<18.0	80.0	18.0	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,2-Dichlorobenzene	<6.40	80.0	6.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,3-Dichlorobenzene	<4.80	80.0	4.80	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,4-Dichlorobenzene	< 5.20	80.0	5.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,2-Dichloroethane	<16.4	80.0	16.4	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,1-Dichloroethane	<6.40	80.0	6.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,1-Dichloroethylene	<12.8	80.0	12.8	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
trans-1,2-Dichloroethylene	<12.4	80.0	12.4	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,2-Dichloropropane	<8.00	80.0	8.00	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
cis-1,3-Dichloropropene	< 5.20	80.0	5.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,4-Dioxane	<900	2000	900	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
trans-1,3-Dichloropropene	<9.20	80.0	9.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Ethanol	<422	2000	422	μg/L	40	R-06	624.1	6/16/20	6/16/20 20:13	MFF
Ethylbenzene	778	80.0	5.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Methyl tert-Butyl Ether (MTBE)	<10.0	80.0	10.0	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Methylene Chloride	<13.6	200	13.6	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,1,2,2-Tetrachloroethane	<8.80	80.0	8.80	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Tetrachloroethylene	<7.20	80.0	7.20	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Toluene	118	40.0	5.60	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,1,1-Trichloroethane	<8.00	80.0	8.00	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
1,1,2-Trichloroethane	< 6.40	80.0	6.40	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Trichloroethylene	<9.60	80.0	9.60	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Trichlorofluoromethane (Freon 11)	<13.2	80.0	13.2	μg/L	40		624.1	6/16/20	6/16/20 20:13	MFF
Vinyl Chloride	<18.0	80.0	18.0	$\mu g/L$	40		624.1	6/16/20	6/16/20 20:13	MFF
m+p Xylene	789	80.0	12.0	$\mu g/L$	40		624.1	6/16/20	6/16/20 20:13	MFF
o-Xylene	326	40.0	6.80	$\mu g/L$	40		624.1	6/16/20	6/16/20 20:13	MFF
Surrogates		% Reco	verv	Recovery Limits		Flag/Qual				

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	95.6	70-130		6/16/20 20:13
Toluene-d8	100	70-130		6/16/20 20:13
4-Bromofluorobenzene	102	70-130		6/16/20 20:13

IMR

IMR

6/19/20 0:51

6/19/20 0:51



Analyte

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020

Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Results

0.33

0.11

0.13

0.043

< 0.44

0.22

< 0.017

0.062

0.10

0.10

0.017

0.018

Sample ID: 20F0701-01
Sample Matrix: Ground Water

Benzo(a)anthracene (SIM)

Benzo(b)fluoranthene (SIM)

Benzo(k)fluoranthene (SIM)

Dibenz(a,h)anthracene (SIM)

Indeno(1,2,3-cd)pyrene (SIM)

Bis(2-ethylhexyl)phthalate (SIM)

Benzo(a)pyrene (SIM)

Chrysene (SIM)

	Semivolatile Organic Compounds by GC/MS											
						Date	Date/Time					
RL	DL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst				
0.051	0.016	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR				
0.10	0.012	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR				
0.051	0.015	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR				
0.20	0.012	$\mu g/L$	1	J	625.1	6/18/20	6/19/20 0:51	IMR				
1.0	0.44	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR				
0.20	0.015	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR				

625.1

625.1

6/18/20

6/18/20

Pentachlorophenol (SIM)	< 0.34	1.0	0.34	$\mu g/L$	1		625.1	6/18/20	6/19/20 0:51	IMR
Surrogates		% Recov	ery	Recovery Limits		Flag/Qual				
2-Fluorophenol (SIM)		45.3		15-110					6/19/20 0:51	
Phenol-d6 (SIM)		36.5		15-110					6/19/20 0:51	
Nitrobenzene-d5		49.8		30-130					6/19/20 0:51	
2-Fluorobiphenyl		61.3		30-130					6/19/20 0:51	
2,4,6-Tribromophenol (SIM)		98.6		15-110					6/19/20 0:51	
p-Terphenyl-d14		67.6		30-130					6/19/20 0:51	

1

J

 $\mu g/L$ 

 $\mu g/L$ 



Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020

Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

## Semivolatile Organic Compounds by - GC/MS

		Semi	ivolatile Organic C	ompounds b	oy - GC/MS				
							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Acenaphthene	103	5.10	μg/L	1	MS-09	625.1	6/18/20	6/19/20 14:33	IMR
Acenaphthylene	<5.10	5.10	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Anthracene	<5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Benzidine	<20.4	20.4	μg/L	1	V-04, V-05, MS-09, V-35	625.1	6/18/20	6/19/20 14:33	IMR
Benzo(g,h,i)perylene	<5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
4-Bromophenylphenylether	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Butylbenzylphthalate	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
4-Chloro-3-methylphenol	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Bis(2-chloroethyl)ether	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Bis(2-chloroisopropyl)ether	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
2-Chloronaphthalene	<10.2	10.2	$\mu g/L$	1	MS-09	625.1	6/18/20	6/19/20 14:33	IMR
2-Chlorophenol	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
4-Chlorophenylphenylether	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Di-n-butylphthalate	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
1,3-Dichlorobenzene	< 5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
1,4-Dichlorobenzene	< 5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
1,2-Dichlorobenzene	<5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
3,3-Dichlorobenzidine	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2,4-Dichlorophenol	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Diethylphthalate	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2,4-Dimethylphenol	225	102	μg/L	10		625.1	6/18/20	6/19/20 14:58	IMR
Dimethylphthalate	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
4,6-Dinitro-2-methylphenol	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2,4-Dinitrophenol	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2,4-Dinitrotoluene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2,6-Dinitrotoluene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Di-n-octylphthalate	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
1,2-Diphenylhydrazine/Azobenzene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Bis(2-Ethylhexyl)phthalate	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Fluoranthene	<5.10	5.10	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Fluorene	38.6	5.10	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Hexachlorobenzene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Hexachlorobutadiene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Hexachlorocyclopentadiene	<10.2	10.2	μg/L	1	V-05, L-04, MS-09	625.1	6/18/20	6/19/20 14:33	IMR
Hexachloroethane	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Isophorone	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
Naphthalene	3080	255	μg/L	50		625.1	6/18/20	6/19/20 15:23	IMR
Nitrobenzene	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
2-Nitrophenol	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
4-Nitrophenol	<10.2	10.2	μg/L μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR
N-Nitrosodimethylamine	<10.2	10.2	μg/L μg/L	1	V-06	625.1	6/18/20	6/19/20 14:33	IMR
N-Nitrosodiphenylamine/Diphenylamine	<10.2	10.2	μg/L μg/L	1	¥-00	625.1	6/18/20	6/19/20 14:33	IMR
N-Nitrosodi-n-propylamine									
13-13105001-11-propyramme	<10.2	10.2	μg/L	1		625.1	6/18/20	6/19/20 14:33	IMR



Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020
Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

p-Terphenyl-d14

Semivolatile (	Organic Com	pounds by -	GC/MS
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							Date	Date/Time	
Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
2-Methylnaphthalene	199	51.0	$\mu g/L$	10		625.1	6/18/20	6/19/20 14:58	IMR
Phenanthrene	29.4	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
2-Methylphenol	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Phenol	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
3/4-Methylphenol	<20.4	20.4	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Pyrene	< 5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
1,2,4-Trichlorobenzene	< 5.10	5.10	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
2,4,6-Trichlorophenol	<10.2	10.2	$\mu g/L$	1		625.1	6/18/20	6/19/20 14:33	IMR
Surrogates		% Recovery	Recovery Limit	ts	Flag/Qual				
2-Fluorophenol		43.5	15-110					6/19/20 14:33	
2-Fluorophenol		39.4	15-110					6/19/20 14:58	
2-Fluorophenol		*	15-110		S-01			6/19/20 15:23	
Phenol-d6		36.4	15-110					6/19/20 14:33	
Phenol-d6		30.8	15-110					6/19/20 14:58	
Phenol-d6		*	15-110		S-01			6/19/20 15:23	
Nitrobenzene-d5		84.1	30-130					6/19/20 14:33	
Nitrobenzene-d5		65.0	30-130					6/19/20 14:58	
Nitrobenzene-d5		*	30-130		S-01			6/19/20 15:23	
2-Fluorobiphenyl		84.8	30-130					6/19/20 14:33	
2-Fluorobiphenyl		80.0	30-130					6/19/20 14:58	
2-Fluorobiphenyl		*	30-130		S-01			6/19/20 15:23	
2,4,6-Tribromophenol		91.7	15-110					6/19/20 14:33	
2,4,6-Tribromophenol		67.8	15-110					6/19/20 14:58	
2,4,6-Tribromophenol		*	15-110		S-01			6/19/20 15:23	
p-Terphenyl-d14		71.4	30-130					6/19/20 14:33	
p-Terphenyl-d14		65.4	30-130					6/19/20 14:58	

30-130

S-01

6/19/20 15:23



Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020

Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

Polychlorinated	<b>Biphenyls</b>	By GC/ECD
1 ory chilor mateu	Diplicity	D) GC/LCD

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	< 0.0968	0.105	0.0968	μg/L	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1221 [1]	< 0.0847	0.105	0.0847	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1232 [1]	< 0.105	0.105	0.105	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1242 [1]	< 0.0911	0.105	0.0911	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1248 [1]	< 0.100	0.105	0.100	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1254 [1]	< 0.0553	0.105	0.0553	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Aroclor-1260 [1]	< 0.103	0.105	0.103	$\mu g/L$	1		608.3	6/17/20	6/18/20 12:05	WAL
Surrogates		% Reco	very	Recovery Limits	s	Flag/Qual				
Decachlorobiphenyl [1]		63.2		30-150					6/18/20 12:05	
Decachlorobiphenyl [2]		70.2		30-150					6/18/20 12:05	
Tetrachloro-m-xylene [1]		59.3		30-150					6/18/20 12:05	
Tetrachloro-m-xylene [2]		66.0		30-150					6/18/20 12:05	

Work Order: 20F0701



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Sample Description:

Project Location: Liberty Utilities
Date Received: 6/15/2020
Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

#### Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
			DL		Dilution	rag/Quar		•	•	
Antimony	ND	1.0		μg/L	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Arsenic	ND	0.80		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Cadmium	ND	0.20		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Chromium	1.1	1.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Chromium, Trivalent	0.0011			mg/L	1		Tri Chrome Calc.	6/16/20	6/17/20 10:59	QNW
Copper	1.1	1.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Iron	21	0.050		mg/L	1		EPA 200.7	6/16/20	6/17/20 17:40	MJH
Lead	ND	0.50		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	6/17/20	6/18/20 10:24	CJV
Nickel	ND	5.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Selenium	ND	5.0	1.6	$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Silver	ND	0.20		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Zinc	ND	10		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 10:59	QNW
Hardness	100	1.4		mg/L	1		EPA 200.7	6/16/20	6/17/20 17:40	MJH



Sample Description: Work Order: 20F0701

Project Location: Liberty Utilities
Date Received: 6/15/2020
Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

#### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

								Date	Date/Time	
Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Ammonia as N	6.3	0.50	0.22	mg/L	5		EPA 350.1	6/16/20	6/17/20 9:43	MMH
Chloride	35	1.0		mg/L	1		EPA 300.0	6/17/20	6/17/20 18:56	EC
Chlorine, Residual	ND	0.020		mg/L	1		SM21-22 4500 CL G	6/15/20	6/15/20 20:30	AWA
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	6/15/20	6/15/20 19:00	AWA
Total Suspended Solids	24	1.5		mg/L	1		SM21-22 2540D	6/17/20	6/17/20 13:05	LL
Silica Gel Treated HEM (SGT-HEM)	1.6	1.6		mg/L	1		EPA 1664B	6/16/20	6/16/20 10:30	LL

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Sample Description: Work Order: 20F0701

Project Location: Liberty Utilities
Date Received: 6/15/2020
Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

#### **Drinking Water Organics EPA 504.1**

								Date	Date/Time	
Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
1,2-Dibromoethane (EDB) (2)	ND	0.021	0.012	μg/L	1		EPA 504.1	6/19/20	6/19/20 18:40	JMB
Surrogates		% Reco	very	Recovery Limits	3	Flag/Qual				
1,3-Dibromopropane (2)		113		70-130					6/19/20 18:40	



Project Location: Liberty Utilities Sample Description: Work Order: 20F0701

Date Received: 6/15/2020

Field Sample #: C61MW-4

Sampled: 6/15/2020 09:30

Sample ID: 20F0701-01
Sample Matrix: Ground Water

#### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

									Date	Date/Time	
	Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Cyanide		ND	0.005	0.001	mg/L	1		SM21-22 4500 CN E		6/17/20 14:30	AAL



Sample Description:

Work Order: 20F0701

Project Location: Liberty Utilities Date Received: 6/15/2020

Field Sample #: Receiving Water

Sample ID: 20F0701-02
Sample Matrix: Ground Water

Sampled: 6/15/2020 09:30

Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
	Results	KL	DL	Cints	Dilution	riag/Quar	Method	Ттератец	Anaryzeu	Analyst
Antimony	ND	1.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Arsenic	1.4	0.80		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Cadmium	0.33	0.20		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Chromium	4.7	1.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Chromium, Trivalent	0.0047			mg/L	1		Tri Chrome Calc.	6/16/20	6/17/20 11:02	QNW
Copper	15	1.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Iron	4.8	0.050		mg/L	1		EPA 200.7	6/16/20	6/17/20 17:47	MJH
Lead	15	0.50		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Mercury	ND	0.00010		mg/L	1		EPA 245.1	6/17/20	6/18/20 10:26	CJV
Nickel	ND	5.0		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Selenium	ND	5.0	1.6	$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Silver	0.32	0.20		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Zinc	43	10		$\mu g/L$	1		EPA 200.8	6/16/20	6/17/20 11:02	QNW
Hardness	72	1.4		mg/L	1		EPA 200.7	6/16/20	6/17/20 17:47	MJH



Sample Description: Work Order: 20F0701

Date Received: 6/15/2020

Field Sample #: Receiving Water

Project Location: Liberty Utilities

Sample ID: 20F0701-02
Sample Matrix: Ground Water

Sampled: 6/15/2020 09:30

#### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

								Date	Date/Time	
Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Prepared	Analyzed	Analyst
Ammonia as N	0.20	0.10	0.045	mg/L	1		EPA 350.1	6/16/20	6/17/20 9:34	MMH
Hexavalent Chromium	ND	0.0040		mg/L	1		SM21-22 3500 Cr B	6/15/20	6/15/20 19:00	AWA



### **Sample Extraction Data**

Prep Method: SW-846 3510C	Analytical Method: 608.3
---------------------------	--------------------------

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260167	950	5.00	06/17/20

Prep Method: SW-846 5030B Analytical Method: 624.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260074	0.125	5.00	06/16/20

Prep Method: SW-846 3510C Analytical Method: 625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260252	980	1.00	06/18/20
20F0701-01RE1 [C61MW-4]	B260252	980	1.00	06/18/20
20F0701-01RE2 [C61MW-4]	B260252	980	1.00	06/18/20

Prep Method: SW-846 3510C Analytical Method: 625.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260344	980	1.00	06/18/20

#### EPA 1664B

Lab Number [Field ID]	Batch	Initial [mL]	Date
20F0701-01 [C61MW-4]	B260050	900	06/16/20

Prep Method: EPA 200.7 Analytical Method: EPA 200.7

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260105	50.0	50.0	06/16/20
20F0701-01 [C61MW-4]	B260105	50.0		06/16/20
20F0701-02 [Receiving Water]	B260105	50.0	50.0	06/16/20
20F0701-02 [Receiving Water]	B260105	50.0		06/16/20

Prep Method: EPA 200.8 Analytical Method: EPA 200.8

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260106	50.0	50.0	06/16/20
20F0701-02 [Receiving Water]	B260106	50.0	50.0	06/16/20

Prep Method: EPA 245.1 Analytical Method: EPA 245.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260158	6.00	6.00	06/17/20
20F0701-02 [Receiving Water]	B260158	6.00	6.00	06/17/20



### **Sample Extraction Data**

Prep Method: EPA 300.0	Analytical Method: EPA 300.0
------------------------	------------------------------

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260174	10.0	10.0	06/17/20

#### EPA 350.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260061	100	100	06/16/20
20F0701-02 [Receiving Water]	B260061	100	100	06/16/20

#### Prep Method: EPA 504 water Analytical Method: EPA 504.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260377	34.0	35.0	06/19/20

#### SM21-22 2540D

Lab Number [Field ID]	Batch	Initial [mL]	Date
20F0701-01 [C61MW-4]	B260148	340	06/17/20

#### SM21-22 3500 Cr B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260040	50.0	50.0	06/15/20
20F0701-02 [Receiving Water]	B260040	50.0	50.0	06/15/20

## SM21-22 4500 CL G

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
20F0701-01 [C61MW-4]	B260043	100	100	06/15/20

### Prep Method: EPA 200.8 Analytical Method: Tri Chrome Calc.

Lab Number [Field ID]	Batch	Initial [mL]	Date
20F0701-01 [C61MW-4]	B260106	50.0	06/16/20
20F0701-02 [Receiving Water]	B260106	50.0	06/16/20



#### QUALITY CONTROL

Spike

Source

%REC

RPD

### Volatile Organic Compounds by GC/MS - Quality Control

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Satch B260074 - SW-846 5030B										
Blank (B260074-BLK1)				Prepared & A	Analyzed: 06	/16/20				
cetone	ND	50.0	μg/L							
ert-Amyl Methyl Ether (TAME)	ND	0.500	$\mu g/L$							
Benzene	ND	1.00	$\mu g/L$							
Bromodichloromethane	ND	2.00	$\mu g/L$							
Bromoform	ND	2.00	$\mu g/L$							
Bromomethane	ND	2.00	$\mu g/L$							
ert-Butyl Alcohol (TBA)	ND	20.0	$\mu g/L$							
Carbon Tetrachloride	ND	2.00	$\mu g/L$							
Chlorobenzene	ND	2.00	$\mu g/L$							
Chlorodibromomethane	ND	2.00	$\mu g/L$							
Chloroethane	ND	2.00	$\mu g/L$							
hloroform	ND	2.00	$\mu g/L$							
hloromethane	ND	2.00	μg/L							
2-Dichlorobenzene	ND	2.00	μg/L							
3-Dichlorobenzene	ND	2.00	μg/L							
,4-Dichlorobenzene	ND	2.00	μg/L							
2-Dichloroethane	ND	2.00	μg/L							
1-Dichloroethane	ND	2.00	μg/L							
1-Dichloroethylene	ND	2.00	μg/L							
ans-1,2-Dichloroethylene	ND	2.00	μg/L							
2-Dichloropropane	ND	2.00	μg/L							
s-1,3-Dichloropropene	ND	2.00	μg/L							
4-Dioxane	ND	50.0	μg/L							
ans-1,3-Dichloropropene	ND	2.00	μg/L							
thanol	ND	50.0	μg/L							
thylbenzene	ND	2.00	μg/L							
lethyl tert-Butyl Ether (MTBE)	ND ND	2.00	μg/L μg/L							
lethylene Chloride	ND ND	5.00	μg/L							
1,2,2-Tetrachloroethane	ND ND	2.00	μg/L μg/L							
etrachloroethylene	ND ND	2.00	μg/L							
oluene	ND ND	1.00	μg/L μg/L							
1,1-Trichloroethane	ND ND	2.00	μg/L							
1,2-Trichloroethane	ND ND	2.00	μg/L μg/L							
richloroethylene	ND ND	2.00	μg/L μg/L							
richlorofluoromethane (Freon 11)	ND ND	2.00	μg/L μg/L							
inyl Chloride		2.00	μg/L μg/L							
n+p Xylene	ND ND	2.00	μg/L μg/L							
Xylene	ND ND	1.00	μg/L μg/L							
		1.00					-0.4			
urrogate: 1,2-Dichloroethane-d4	24.3		μg/L	25.0		97.2	70-130			
urrogate: Toluene-d8	25.0		μg/L	25.0		99.8	70-130			
urrogate: 4-Bromofluorobenzene	25.2		μg/L	25.0		101	70-130			
CS (B260074-BS1)				Prepared & A	Analyzed: 06	/16/20				
cetone	170	50.0	$\mu \text{g/L}$	200		85.3	70-160			
rt-Amyl Methyl Ether (TAME)	20	0.500	$\mu \text{g/L}$	20.0		100	70-130			
enzene	20	1.00	$\mu g \! / \! L$	20.0		101	65-135			
romodichloromethane	21	2.00	μg/L	20.0		107	65-135			
romoform	23	2.00	$\mu g/L$	20.0		116	70-130			
romomethane	8.7	2.00	$\mu g/L$	20.0		43.4	15-185			
ert-Butyl Alcohol (TBA)	150	20.0	$\mu g/L$	200		73.4	40-160			
arbon Tetrachloride	22	2.00	μg/L	20.0		109	70-130			
Chlorobenzene	21	2.00	μg/L	20.0		106	65-135			



#### QUALITY CONTROL

### Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260074 - SW-846 5030B										
LCS (B260074-BS1)				Prepared &	Analyzed: 06/	16/20				
Chlorodibromomethane	22	2.00	μg/L	20.0		109	70-135			
Chloroethane	19	2.00	μg/L	20.0		95.1	40-160			
Chloroform	21	2.00	μg/L	20.0		104	70-135			
Chloromethane	16	2.00	$\mu g/L$	20.0		78.6	20-205			
1,2-Dichlorobenzene	20	2.00	$\mu g/L$	20.0		102	65-135			
1,3-Dichlorobenzene	21	2.00	$\mu g/L$	20.0		104	70-130			
1,4-Dichlorobenzene	20	2.00	$\mu g/L$	20.0		100	65-135			
1,2-Dichloroethane	19	2.00	$\mu g/L$	20.0		95.0	70-130			
1,1-Dichloroethane	22	2.00	$\mu g/L$	20.0		108	70-130			
1,1-Dichloroethylene	21	2.00	μg/L	20.0		106	50-150			
rans-1,2-Dichloroethylene	21	2.00	$\mu g/L$	20.0		103	70-130			
1,2-Dichloropropane	21	2.00	$\mu g/L$	20.0		106	35-165			
cis-1,3-Dichloropropene	21	2.00	μg/L	20.0		105	25-175			
1,4-Dioxane	120	50.0	μg/L	200		58.3	40-130			
rans-1,3-Dichloropropene	22	2.00	μg/L	20.0		112	50-150			
Ethanol	140	50.0	μg/L	200		71.8	40-160			
Ethylbenzene	21	2.00	μg/L	20.0		106	60-140			
Methyl tert-Butyl Ether (MTBE)	21	2.00	μg/L	20.0		103	70-130			
Methylene Chloride	19	5.00	μg/L	20.0		93.0	60-140			
1,1,2,2-Tetrachloroethane	22	2.00	μg/L	20.0		110	60-140			
Tetrachloroethylene	22	2.00	μg/L	20.0		110	70-130			
Coluene	21	1.00	μg/L μg/L	20.0		106	70-130			
,1,1-Trichloroethane	21	2.00	μg/L μg/L	20.0		106	70-130			
,1,2-Trichloroethane	22	2.00	μg/L μg/L	20.0		111	70-130			
Frichloroethylene		2.00	μg/L μg/L	20.0		108	65-135			
Frichlorofluoromethane (Freon 11)	22 20	2.00	μg/L μg/L	20.0		99.0	50-150			
Vinyl Chloride		2.00	μg/L μg/L	20.0		97.2	5-195			
m+p Xylene	19	2.00	μg/L μg/L	40.0		104	5-195 70-130			
n-tp Aylene o-Xylene	41 21	1.00	μg/L μg/L	20.0		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	24.4		μg/L	25.0		97.5	70-130			
Surrogate: Toluene-d8	24.9		μg/L	25.0		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	25.3		μg/L	25.0		101	70-130			
Matrix Spike (B260074-MS1)	Sou	rce: 20F0701-		Prepared &	Analyzed: 06/	16/20				
Acetone	3400	2000	$\mu \text{g/L}$	4000	ND	85.4	70-130			
ert-Amyl Methyl Ether (TAME)	360	20.0	$\mu g/L$	400	ND	89.3	70-130			
Benzene	2300	40.0	$\mu g/L$	400	2000	88.8	37-151			
Bromodichloromethane	410	80.0	$\mu g/L$	400	ND	102	35-155			
Bromoform	410	80.0	$\mu g/L$	400	ND	101	45-169			
Bromomethane	460	80.0	$\mu g \! / \! L$	400	ND	116	20-242			
ert-Butyl Alcohol (TBA)	3700	800	$\mu g/L$	4000	ND	91.3	70-130			
Carbon Tetrachloride	430	80.0	$\mu g \! / \! L$	400	ND	107	70-140			
Chlorobenzene	430	80.0	$\mu g/L$	400	ND	108	37-160			
Chlorodibromomethane	410	80.0	$\mu g/L$	400	ND	102	53-149			
Chloroethane	350	80.0	$\mu g/L$	400	ND		14-230			
Chloroform	410	80.0	$\mu g/L$	400	ND	102	51-138			
Chloromethane	310	80.0	μg/L	400	ND	76.7	20-273			
1,2-Dichlorobenzene	400	80.0	μg/L	400	ND		18-190			
,3-Dichlorobenzene	390	80.0	μg/L	400	ND	98.3	59-156			
1,4-Dichlorobenzene	390	80.0	μg/L	400	ND		18-190			
1,2-Dichloroethane	370	80.0	μg/L	400	ND		49-155			
	370	80.0	μg/L	400	ND ND	98.1	59-155			



### 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### QUALITY CONTROL

### Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260074 - SW-846 5030B										
Matrix Spike (B260074-MS1)	Sou	rce: 20F0701-	01	Prepared &	Analyzed: 06/1	6/20				
1,1-Dichloroethylene	380	80.0	μg/L	400	ND	94.6	20-234			
trans-1,2-Dichloroethylene	360	80.0	$\mu \text{g}/L$	400	ND	91.2	54-156			
1,2-Dichloropropane	400	80.0	$\mu g/L$	400	ND	101	20-210			
cis-1,3-Dichloropropene	380	80.0	$\mu g/L$	400	ND	94.1	20-227			
1,4-Dioxane	3900	2000	μg/L	4000	ND	97.6	70-130			
rans-1,3-Dichloropropene	380	80.0	$\mu \text{g/L}$	400	ND	93.9	17-183			
Ethanol	3100	2000	μg/L	4000	ND	78.7	70-130			R-06
Ethylbenzene	1200	80.0	μg/L	400	780	107	37-162			
Methyl tert-Butyl Ether (MTBE)	360	80.0	μg/L	400	ND	89.2	70-130			
Methylene Chloride	350	200	μg/L	400	ND	88.5	20-221			
1,1,2,2-Tetrachloroethane	420	80.0	μg/L	400	ND	104	46-157			
Tetrachloroethylene	420	80.0	μg/L	400	ND	106	64-148			
Toluene	520	40.0	μg/L	400	120	102	47-150			
1,1,1-Trichloroethane	410	80.0	μg/L	400	ND	103	52-162			
1,1,2-Trichloroethane	410	80.0	μg/L	400	ND	102	52-150			
Frichloroethylene	420	80.0	μg/L	400	ND	105	70-157			
Frichlorofluoromethane (Freon 11)	410	80.0	μg/L	400	ND	102	17-181			
Vinyl Chloride	280	80.0	μg/L	400	ND	69.2	20-251			
m+p Xylene	1600	80.0	μg/L	800	790	105	70-130			
o-Xylene	760	40.0	μg/L	400	330	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	24.1		μg/L	25.0		96.4	70-130			
Surrogate: Toluene-d8	24.8		μg/L	25.0		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	25.7		μg/L	25.0		103	70-130			
						6/20				
Matrix Spike Dup (B260074-MSD1)	Sou	rce: 20F0701-	01	Prepared &	Analyzed: 06/1	6/20				
Acetone	<b>Sou</b> 3500	2000	μg/L	Prepared & A	Analyzed: 06/1 ND	86.7	70-130	1.55	30	
Matrix Spike Dup (B260074-MSD1)  Acetone tert-Amyl Methyl Ether (TAME)		2000 20.0	μg/L μg/L				70-130 70-130	1.55 2.43	30 30	
Acetone ert-Amyl Methyl Ether (TAME) Benzene	3500	2000 20.0 40.0	μg/L μg/L μg/L	4000 400 400	ND ND 2000	86.7 91.5 91.0	70-130 37-151	2.43 0.380		
Acetone tert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane	3500 370	2000 20.0 40.0 80.0	μg/L μg/L μg/L μg/L	4000 400 400 400	ND ND 2000 ND	86.7 91.5 91.0 106	70-130 37-151 35-155	2.43 0.380 2.88	30 61 56	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform	3500 370 2300	2000 20.0 40.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400	ND ND 2000 ND ND	86.7 91.5 91.0 106 101	70-130 37-151 35-155 45-169	2.43 0.380 2.88 0.594	30 61 56 42	
Acetone  Acetone  Hert-Amyl Methyl Ether (TAME)  Benzene  Bromodichloromethane  Bromoform  Bromomethane	3500 370 2300 420 400 350	2000 20.0 40.0 80.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400	ND ND 2000 ND ND ND	86.7 91.5 91.0 106 101 88.1	70-130 37-151 35-155 45-169 20-242	2.43 0.380 2.88 0.594 27.3	30 61 56 42 61	
Acetone  Acetone  ert-Amyl Methyl Ether (TAME)  Benzene  Bromodichloromethane  Bromoform  Bromomethane  ert-Butyl Alcohol (TBA)	3500 370 2300 420 400 350 3700	2000 20.0 40.0 80.0 80.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400 400	ND ND 2000 ND ND ND ND	86.7 91.5 91.0 106 101 88.1 92.6	70-130 37-151 35-155 45-169 20-242 70-130	2.43 0.380 2.88 0.594 27.3 1.48	30 61 56 42 61 30	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride	3500 370 2300 420 400 350 3700 410	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400 4000 4000	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103	70-130 37-151 35-155 45-169 20-242 70-130 70-140	2.43 0.380 2.88 0.594 27.3 1.48 3.52	30 61 56 42 61 30 41	
Acetone lert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane tert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene	3500 370 2300 420 400 350 3700 410 430	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184	30 61 56 42 61 30 41 53	
Acetone tert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane tert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane	3500 370 2300 420 400 350 3700 410 430 410	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986	30 61 56 42 61 30 41 53 50	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane	3500 370 2300 420 400 350 3700 410 430 410 340	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98	30 61 56 42 61 30 41 53 50 78	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorodibromomethane Chloroethane Chloroform	3500 370 2300 420 400 350 3700 410 430 410 340	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14	30 61 56 42 61 30 41 53 50 78	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorodibromomethane Chloroethane Chloroform Chloromethane	3500 370 2300 420 400 350 3700 410 430 410 340 420 250	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5	30 61 56 42 61 30 41 53 50 78 54 60	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorodibromomethane Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00	30 61 56 42 61 30 41 53 50 78 54 60 57	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96	30 61 56 42 61 30 41 53 50 78 54 60 57	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloroform Chloromethane ,2-Dichlorobenzene ,3-Dichlorobenzene ,4-Dichlorobenzene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L нg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2-Dichlorobenzene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 410 370	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57	
Acetone lert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane lert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorothane 1,1-Dichloroethane 1,1-Dichloroethane	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 410 370 400	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethylene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 370 400 380	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroform Chloroform Chloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethylene rans-1,2-Dichloroethylene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 370 400 380 360	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234 54-156	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45	
Acetone lert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane Bromomethane lert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chlorodrom Chloroethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethylene ly-Dichloroethylene ly-Dichloroethylene ly-Dichloropropane	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 370 400 380 360 410	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0 80.0	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6 103	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234 54-156 20-210	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77 1.76	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45 55	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,4-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethylene rans-1,2-Dichloroethylene 1,2-Dichloropropane cis-1,3-Dichloropropene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 370 400 380 360 410 380	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6 103 95.5	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234 54-156 20-210 20-227	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77 1.76 1.48	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45 55	
Acetone lert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane Bromoform Bromomethane Bromoform Bromomethane Bromoform Bromomethane Cert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chlorodibromomethane Chloroform Chloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethylene Irans-1,2-Dichloroethylene Irans-1,2-Dichloropropane cis-1,3-Dichloropropene 1,4-Dioxane	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 410 370 400 380 360 410 380 3900	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Lygu Lygu Lygu Lygu Lygu Lygu Lygu Lygu	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6 103 95.5 98.7	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234 54-156 20-210 20-227 70-130	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77 1.76 1.48 1.17	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45 55 58 30	
Acetone ert-Amyl Methyl Ether (TAME) Benzene Bromodichloromethane Bromoform Bromomethane ert-Butyl Alcohol (TBA) Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chlorodibromomethane chloroform Chloromethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,1-Dichlorobenzene 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethylene rans-1,2-Dichloropropene 1,4-Dioxane rans-1,3-Dichloropropene	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 410 370 400 380 360 410 380 3900 380	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6 103 95.5 98.7 93.9	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 49-155 59-156 18-190 49-155 59-155 20-234 54-156 20-210 20-227 70-130 17-183	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77 1.76 1.48 1.17 0.00	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45 55 58 30 86	R-06
Acetone	3500 370 2300 420 400 350 3700 410 430 410 340 420 250 400 410 410 370 400 380 360 410 380 3900	2000 20.0 40.0 80.0 80.0 80.0 80.0 80.0 80.0 8	Lygu Lygu Lygu Lygu Lygu Lygu Lygu Lygu	4000 400 400 400 400 400 400 400 400 40	ND ND 2000 ND	86.7 91.5 91.0 106 101 88.1 92.6 103 109 101 84.2 104 63.7 101 103 103 91.8 101 94.0 89.6 103 95.5 98.7	70-130 37-151 35-155 45-169 20-242 70-130 70-140 37-160 53-149 14-230 51-138 20-273 18-190 59-156 18-190 49-155 59-155 20-234 54-156 20-210 20-227 70-130	2.43 0.380 2.88 0.594 27.3 1.48 3.52 0.184 0.0986 4.98 2.14 18.5 2.00 4.96 4.37 0.546 3.11 0.636 1.77 1.76 1.48 1.17	30 61 56 42 61 30 41 53 50 78 54 60 57 43 57 49 40 32 45 55 58 30 86	R-06



Surrogate: 4-Bromofluorobenzene

### 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### QUALITY CONTROL

### Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260074 - SW-846 5030B										
Matrix Spike Dup (B260074-MSD1)	Sou	rce: 20F0701-	01	Prepared &	Analyzed: 06/1	6/20				
Methylene Chloride	350	200	μg/L	400	ND	87.0	20-221	1.71	28	
1,1,2,2-Tetrachloroethane	410	80.0	$\mu g\!/\!L$	400	ND	104	46-157	0.0964	61	
Tetrachloroethylene	440	80.0	$\mu g\!/\!L$	400	ND	109	64-148	2.97	39	
Toluene	530	40.0	$\mu g\!/\!L$	400	120	104	47-150	1.66	41	
1,1,1-Trichloroethane	410	80.0	$\mu g\!/\!L$	400	ND	103	52-162	0.194	36	
1,1,2-Trichloroethane	410	80.0	$\mu g\!/\!L$	400	ND	103	52-150	0.878	45	
Trichloroethylene	420	80.0	$\mu g\!/\!L$	400	ND	106	70-157	0.857	48	
Trichlorofluoromethane (Freon 11)	410	80.0	$\mu g/L$	400	ND	102	17-181	0.882	84	
Vinyl Chloride	280	80.0	$\mu g\!/\!L$	400	ND	69.5	20-251	0.433	66	
m+p Xylene	1600	80.0	$\mu g\!/\!L$	800	790	104	70-130	0.517	20	
o-Xylene	760	40.0	$\mu g/L$	400	330	107	70-130	0.159	20	
Surrogate: 1,2-Dichloroethane-d4	24.1		μg/L	25.0		96.4	70-130			
Surrogate: Toluene-d8	25.1		$\mu g/L$	25.0		100	70-130			

 $\mu g/L$ 

25.0

102

70-130

25.6



#### QUALITY CONTROL

#### Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte		Reporting		Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B260344 - SW-846 3510C										
Blank (B260344-BLK1)				Prepared & A	Analyzed: 06	/18/20				
Benzo(a)anthracene (SIM)	ND	0.050	μg/L	•						
Benzo(a)pyrene (SIM)	ND	0.10	μg/L							
Benzo(b)fluoranthene (SIM)	ND	0.050	μg/L							
Benzo(k)fluoranthene (SIM)	ND	0.20	μg/L							
Bis(2-ethylhexyl)phthalate (SIM)	ND	1.0	μg/L							
Chrysene (SIM)	ND	0.20	μg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.10	μg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	μg/L							
Pentachlorophenol (SIM)	ND	1.0	μg/L							
				200		43.4	15-110			
Surrogate: 2-Fluorophenol (SIM)	86.7		μg/L	200						
Surrogate: Phenol-d6 (SIM) Surrogate: Nitrobenzene-d5	68.3 68.4		μg/L μg/L	200 100		34.1 68.4	15-110 30-130			
Surrogate: 2-Fluorobiphenyl	63.5		μg/L μg/L	100		63.5	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	03.3 187		μg/L μg/L	200		93.3	15-110			
Surrogate: p-Terphenyl-d14	76.5		μg/L μg/L	100		93.3 76.5	30-130			
	70.3		μg/L				30-130			
LCS (B260344-BS1)		1.0	/1	Prepared & A	Analyzed: 06		22.142			
Benzo(a)anthracene (SIM)	42.1	1.0	μg/L	50.0		84.2	33-143			
Benzo(a)pyrene (SIM)	44.1	2.0	μg/L	50.0		88.3	17-163			
Benzo(b)fluoranthene (SIM)	48.2	1.0	μg/L	50.0		96.4	24-159			
Benzo(k)fluoranthene (SIM)	45.5	4.0	μg/L	50.0		91.0	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	44.0	20	μg/L	50.0		88.0	8-158			
Chrysene (SIM)	41.2	4.0	μg/L	50.0		82.4	17-168			
Dibenz(a,h)anthracene (SIM)	48.3	2.0	μg/L	50.0		96.6	10-227			
Indeno(1,2,3-cd)pyrene (SIM)	50.1	2.0	μg/L	50.0		100	10-171			
Pentachlorophenol (SIM)	36.4	20	μg/L	50.0		72.9	14-176			
Surrogate: 2-Fluorophenol (SIM)	84.0		$\mu g/L$	200		42.0	15-110			
Surrogate: Phenol-d6 (SIM)	68.7		$\mu g/L$	200		34.4	15-110			
Surrogate: Nitrobenzene-d5	68.7		$\mu g/L$	100		68.7	30-130			
Surrogate: 2-Fluorobiphenyl	75.8		$\mu g/L$	100		75.8	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	209		$\mu g/L$	200		105	15-110			
Surrogate: p-Terphenyl-d14	64.3		μg/L	100		64.3	30-130			
LCS Dup (B260344-BSD1)				Prepared & A	Analyzed: 06	/18/20				
Benzo(a)anthracene (SIM)	41.1	1.0	μg/L	50.0		82.3	33-143	2.35	53	
Benzo(a)pyrene (SIM)	42.8	2.0	$\mu g/L$	50.0		85.5	17-163	3.18	72	
Benzo(b)fluoranthene (SIM)	46.8	1.0	$\mu g \! / \! L$	50.0		93.6	24-159	2.95	71	
Benzo(k)fluoranthene (SIM)	44.3	4.0	$\mu g \! / \! L$	50.0		88.6	11-162	2.67	63	
Bis(2-ethylhexyl)phthalate (SIM)	43.7	20	$\mu g/L$	50.0		87.5	8-158	0.547	82	
Chrysene (SIM)	40.5	4.0	$\mu g/L$	50.0		81.0	17-168	1.71	87	
Dibenz(a,h)anthracene (SIM)	47.0	2.0	$\mu g/L$	50.0		94.0	10-227	2.81	126	
Indeno(1,2,3-cd)pyrene (SIM)	48.9	2.0	$\mu g/L$	50.0		97.8	10-171	2.47	99	
Pentachlorophenol (SIM)	35.4	20	$\mu g/L$	50.0		70.7	14-176	3.01	86	
Surrogate: 2-Fluorophenol (SIM)	82.4		μg/L	200		41.2	15-110			
Surrogate: Phenol-d6 (SIM)	69.1		$\mu g/L$	200		34.6	15-110			
Surrogate: Nitrobenzene-d5	69.3		$\mu g/L$	100		69.3	30-130			
Surrogate: 2-Fluorobiphenyl	73.2		$\mu g/L$	100		73.2	30-130			
Commenter 2.4 ( Tribuson on bound (CDA)	201		$\mu g/L$	200		101	15-110			
Surrogate: 2,4,6-Tribromophenol (SIM)										



#### QUALITY CONTROL

#### Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260344 - SW-846 3510C										
Matrix Spike (B260344-MS1)	Source	ce: 20F0701-0	)1	Prepared & A	Analyzed: 06/1	8/20				
Benzo(a)anthracene (SIM)	42.8	1.1	μg/L	53.2	ND	80.4	33-143			
Benzo(a)pyrene (SIM)	44.3	2.1	$\mu g/L$	53.2	ND	83.2	17-163			
Benzo(b)fluoranthene (SIM)	48.3	1.1	$\mu g/L$	53.2	ND	90.8	24-159			
Benzo(k)fluoranthene (SIM)	45.4	4.3	$\mu g/L$	53.2	ND	85.3	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	43.5	21	$\mu g/L$	53.2	ND	81.8	8-158			
Chrysene (SIM)	41.7	4.3	$\mu g/L$	53.2	ND	78.4	17-168			
Dibenz(a,h)anthracene (SIM)	48.3	2.1	$\mu g/L$	53.2	ND	90.8	10-227			
Indeno(1,2,3-cd)pyrene (SIM)	50.2	2.1	$\mu g/L$	53.2	ND	94.4	10-171			
Pentachlorophenol (SIM)	40.6	21	$\mu g/L$	53.2	ND	76.4	14-176			
Surrogate: 2-Fluorophenol (SIM)	99.7		μg/L	213		46.8	15-110			
Surrogate: Phenol-d6 (SIM)	83.6		μg/L	213		39.3	15-110			
Surrogate: Nitrobenzene-d5	72.1		μg/L	106		67.8	30-130			
Surrogate: 2-Fluorobiphenyl	74.5		$\mu g/L$	106		70.0	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	212		$\mu g/L$	213		99.8	15-110			
Surrogate: p-Terphenyl-d14	66.3		$\mu g/L$	106		62.3	30-130			
Matrix Spike Dup (B260344-MSD1)	Source	ce: 20F0701-0	01	Prepared: 06	5/18/20 Analyz	zed: 06/19/2	20			
Benzo(a)anthracene (SIM)	40.1	1.1	μg/L	52.6	ND	76.2	33-143	6.42	53	-
Benzo(a)pyrene (SIM)	41.8	2.1	$\mu g/L$	52.6	ND	79.4	17-163	5.73	72	
Benzo(b)fluoranthene (SIM)	45.5	1.1	$\mu g/L$	52.6	ND	86.5	24-159	5.84	71	
Benzo(k)fluoranthene (SIM)	42.8	4.2	$\mu g/L$	52.6	ND	81.2	11-162	5.91	63	
Bis(2-ethylhexyl)phthalate (SIM)	41.3	21	$\mu g/L$	52.6	ND	78.4	8-158	5.25	82	
Chrysene (SIM)	39.0	4.2	$\mu g/L$	52.6	ND	74.1	17-168	6.62	87	
Dibenz(a,h)anthracene (SIM)	45.5	2.1	$\mu g/L$	52.6	ND	86.4	10-227	6.07	126	
Indeno(1,2,3-cd)pyrene (SIM)	47.3	2.1	$\mu g/L$	52.6	ND	90.0	10-171	5.87	99	
Pentachlorophenol (SIM)	37.6	21	$\mu g/L$	52.6	ND	71.5	14-176	7.66	86	
Surrogate: 2-Fluorophenol (SIM)	85.1		μg/L	211		40.4	15-110			
Surrogate: Phenol-d6 (SIM)	69.4		μg/L	211		33.0	15-110			
Surrogate: Nitrobenzene-d5	66.8		$\mu g/L$	105		63.4	30-130			
Surrogate: 2-Fluorobiphenyl	68.7		μg/L	105		65.2	30-130			
Surrogate: 2,4,6-Tribromophenol (SIM)	199		μg/L	211		94.5	15-110			
Surrogate: p-Terphenyl-d14	61.3		μg/L	105		58.3	30-130			

RPD

%REC



### 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### QUALITY CONTROL

Spike

Source

### Semivolatile Organic Compounds by - GC/MS - Quality Control

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	%REC Limits	RPD	Limit	Notes
Batch B260252 - SW-846 3510C										
Blank (B260252-BLK1)		Prepared: 06/18/20 Analyzed: 06/19/20								
Acenaphthene	ND	5.00	$\mu \text{g/L}$							
Acenaphthylene	ND	5.00	μg/L							
Anthracene	ND	5.00	μg/L							
Benzidine	ND	20.0	μg/L							V-04, V-05, V-35
Benzo(g,h,i)perylene	ND	5.00	μg/L							
4-Bromophenylphenylether	ND	10.0	μg/L							
Butylbenzylphthalate	ND	10.0	μg/L							
4-Chloro-3-methylphenol	ND	10.0	μg/L							
Bis(2-chloroethyl)ether	ND	10.0	μg/L							
Bis(2-chloroisopropyl)ether	ND	10.0	$\mu g/L$							
2-Chloronaphthalene	ND	10.0	μg/L							
2-Chlorophenol	ND	10.0	μg/L							
4-Chlorophenylphenylether	ND	10.0	μg/L							
Di-n-butylphthalate	ND	10.0	$\mu g/L$							
1,3-Dichlorobenzene	ND	5.00	μg/L							
1,4-Dichlorobenzene	ND	5.00	$\mu g/L$							
1,2-Dichlorobenzene	ND	5.00	$\mu g/L$							
3,3-Dichlorobenzidine	ND	10.0	μg/L							
2,4-Dichlorophenol	ND	10.0	μg/L							
Diethylphthalate	ND	10.0	μg/L							
2,4-Dimethylphenol	ND	10.0	μg/L							
Dimethylphthalate	ND	10.0	μg/L							
4,6-Dinitro-2-methylphenol	ND	10.0	μg/L							
2,4-Dinitrophenol	ND	10.0	μg/L							
2,4-Dinitrotoluene	ND	10.0	μg/L							
2,6-Dinitrotoluene	ND	10.0	μg/L							
Di-n-octylphthalate	ND ND	10.0	μg/L							
1,2-Diphenylhydrazine/Azobenzene	ND	10.0	μg/L							
Bis(2-Ethylhexyl)phthalate	ND ND	10.0	μg/L							
Fluoranthene	ND	5.00	μg/L							
Fluorene	ND ND	5.00	μg/L							
Hexachlorobenzene		10.0	μg/L μg/L							
Hexachlorobutadiene	ND	10.0	μg/L μg/L							
Hexachlorocyclopentadiene	ND	10.0	μg/L μg/L							L-04, V-05
Hexachloroethane	ND	10.0								L-04, V-03
Isophorone	ND		μg/L							
Naphthalene	ND	10.0 5.00	μg/L μg/L							
Nitrobenzene	ND	10.0	μg/L μg/L							
2-Nitrophenol	ND	10.0	μg/L μg/L							
4-Nitrophenol	ND	10.0								
N-Nitrosodimethylamine	ND		μg/L							11.06
•	ND	10.0	μg/L							V-06
N-Nitrosodiphenylamine/Diphenylamine	ND	10.0	μg/L							
N-Nitrosodi-n-propylamine	ND	10.0	μg/L							
2-Methylnaphthalene	ND	5.00	μg/L							
Phenanthrene	ND	5.00	μg/L							
2-Methylphenol	ND	10.0	μg/L							
Phenol	ND	10.0	μg/L							
3/4-Methylphenol	ND	20.0	μg/L							
Pyrene	ND	5.00	μg/L							
1,2,4-Trichlorobenzene	ND	5.00	μg/L							
2,4,6-Trichlorophenol	ND	10.0	μg/L							
Surrogate: 2-Fluorophenol	93.2		μg/L	200		46.6	15-110			



#### QUALITY CONTROL

#### Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260252 - SW-846 3510C										
Blank (B260252-BLK1)				Prepared: 06	5/18/20 Analy	zed: 06/19/2	20			
Surrogate: Phenol-d6	72.0		μg/L	200		36.0	15-110			
Surrogate: Nitrobenzene-d5	71.5		$\mu g/L$	100		71.5	30-130			
Surrogate: 2-Fluorobiphenyl	76.8		$\mu g/L$	100		76.8	30-130			
Surrogate: 2,4,6-Tribromophenol	132		$\mu g/L$	200		66.1	15-110			
Surrogate: p-Terphenyl-d14	76.2		$\mu g/L$	100		76.2	30-130			
LCS (B260252-BS1)				Prepared: 06	6/18/20 Analy	zed: 06/19/2	20			
Acenaphthene	37.4	5.00	μg/L	50.0		74.9	47-145			
Acenaphthylene	37.7	5.00	$\mu g/L$	50.0		75.4	33-145			
Anthracene	41.4	5.00	$\mu g/L$	50.0		82.9	27-133			
Benzidine	39.1	20.0	μg/L	50.0		78.3	40-140			V-04, V-05, V-35
Benzo(g,h,i)perylene	33.2	5.00	μg/L	50.0		66.4	10-219			
4-Bromophenylphenylether	36.2	10.0	$\mu \text{g/L}$	50.0		72.4	53-127			
Butylbenzylphthalate	36.2	10.0	$\mu \text{g/L}$	50.0		72.4	10-152			
4-Chloro-3-methylphenol	42.0	10.0	$\mu \text{g/L}$	50.0		84.0	22-147			
Bis(2-chloroethyl)ether	34.3	10.0	$\mu g/L$	50.0		68.6	12-158			
Bis(2-chloroisopropyl)ether	36.1	10.0	μg/L	50.0		72.3	36-166			
2-Chloronaphthalene	32.3	10.0	$\mu \text{g/L}$	50.0		64.5	60-120			
2-Chlorophenol	35.3	10.0	μg/L	50.0		70.5	23-134			
4-Chlorophenylphenylether	38.5	10.0	μg/L	50.0		77.0	25-158			
Di-n-butylphthalate	38.4	10.0	μg/L	50.0		76.8	10-120			
1,3-Dichlorobenzene	25.1	5.00	μg/L	50.0		50.1	10-172			
1,4-Dichlorobenzene	25.6	5.00	μg/L	50.0		51.2	20-124			
1,2-Dichlorobenzene	26.5	5.00	μg/L	50.0		53.0	32-129			
3,3-Dichlorobenzidine	49.0	10.0	μg/L	50.0		98.1	10-262			
2,4-Dichlorophenol	36.8	10.0	μg/L	50.0		73.5	39-135			
Diethylphthalate	38.5	10.0	μg/L	50.0		77.0	10-120			
2,4-Dimethylphenol	32.7	10.0	μg/L	50.0		65.3	32-120			
Dimethylphthalate	40.7	10.0	μg/L	50.0		81.4	10-120			
4,6-Dinitro-2-methylphenol	34.8	10.0	μg/L	50.0		69.7	10-181			
2,4-Dinitrophenol	33.3	10.0	μg/L	50.0		66.6	10-191			
2,4-Dinitrotoluene	47.8	10.0	μg/L	50.0		95.5	39-139			
2,6-Dinitrotoluene	46.5	10.0	μg/L	50.0		93.0	50-158			
Di-n-octylphthalate	34.5	10.0	μg/L	50.0		69.0	4-146			
1,2-Diphenylhydrazine/Azobenzene	35.9	10.0	μg/L	50.0		71.8	40-140			
Bis(2-Ethylhexyl)phthalate	31.8	10.0	μg/L	50.0		63.5	8-158			
Fluoranthene	44.6	5.00	μg/L	50.0		89.3	26-137			
Fluorene	41.5	5.00	μg/L	50.0		83.0	59-121			
Hexachlorobenzene	39.0	10.0	μg/L	50.0		78.0	10-152			
Hexachlorobutadiene	27.5	10.0	μg/L	50.0		55.1	24-120			
Hexachlorocyclopentadiene	9.49	10.0	μg/L	50.0		19.0 *	40-140			V-05, L-04
Hexachloroethane	23.9	10.0	μg/L	50.0		47.9	40-120			,
Isophorone	39.6	10.0	μg/L	50.0		79.1	21-196			
Naphthalene	34.6	5.00	μg/L	50.0		69.3	21-133			
Nitrobenzene	38.2	10.0	μg/L	50.0		76.3	35-180			
2-Nitrophenol	42.3	10.0	μg/L	50.0		84.6	29-182			
4-Nitrophenol	27.7	10.0	μg/L	50.0		55.4	10-132			
N-Nitrosodimethylamine	30.1	10.0	μg/L	50.0		60.2	40-140			V-06
N-Nitrosodiphenylamine/Diphenylamine	39.9	10.0	μg/L	50.0		79.8	40-140			. 50
N-Nitrosodi-n-propylamine	40.8	10.0	μg/L μg/L	50.0		81.5	10-230			
2-Methylnaphthalene	40.8 37.7	5.00	μg/L μg/L	50.0		75.4	40-140			
Phenanthrene	40.3	5.00	μg/L μg/L	50.0		80.6	54-120			



#### QUALITY CONTROL

#### Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260252 - SW-846 3510C										
LCS (B260252-BS1)				Prepared: 06	5/18/20 Analy	yzed: 06/19/2	20			
2-Methylphenol	34.8	10.0	$\mu g/L$	50.0		69.6	40-140			
Phenol	18.9	10.0	$\mu \text{g/L}$	50.0		37.9	5-120			
3/4-Methylphenol	36.0	20.0	$\mu \text{g/L}$	50.0		72.0	40-140			
Pyrene	34.4	5.00	μg/L	50.0		68.9	52-120			
1,2,4-Trichlorobenzene	29.0	5.00	μg/L	50.0		58.1	44-142			
2,4,6-Trichlorophenol	39.6	10.0	μg/L	50.0		79.2	37-144			
Surrogate: 2-Fluorophenol	95.2		μg/L	200		47.6	15-110			
Surrogate: Phenol-d6	74.9		$\mu g/L$	200		37.5	15-110			
Surrogate: Nitrobenzene-d5	75.9		$\mu g/L$	100		75.9	30-130			
Surrogate: 2-Fluorobiphenyl	85.2		$\mu g/L$	100		85.2	30-130			
Surrogate: 2,4,6-Tribromophenol	164		$\mu g/L$	200		81.9	15-110			
Surrogate: p-Terphenyl-d14	67.7		$\mu g/L$	100		67.7	30-130			
LCS Dup (B260252-BSD1)				Prepared: 06	5/18/20 Analy	yzed: 06/19/2	20			
Acenaphthene	37.3	5.00	μg/L	50.0		74.7	47-145	0.268	48	
Acenaphthylene	38.3	5.00	μg/L	50.0		76.6	33-145	1.63	74	
Anthracene	41.0	5.00	μg/L	50.0		82.0	27-133	1.09	66	
Benzidine	48.9	20.0	μg/L	50.0		97.9	40-140	22.3	30	V-04, V-05, V-35
Benzo(g,h,i)perylene	33.7	5.00	μg/L	50.0		67.5	10-219	1.64	97	
4-Bromophenylphenylether	36.4	10.0	μg/L	50.0		72.7	53-127	0.413	43	
Butylbenzylphthalate	37.5	10.0	μg/L	50.0		75.0	10-152	3.53	60	
4-Chloro-3-methylphenol	42.5	10.0	μg/L	50.0		85.0	22-147	1.23	73	
Bis(2-chloroethyl)ether	34.9	10.0	μg/L μg/L	50.0		69.7	12-158	1.65	108	
Bis(2-chloroisopropyl)ether		10.0	μg/L μg/L	50.0		73.0	36-166	0.964	76	
2-Chloronaphthalene	36.5	10.0	μg/L μg/L	50.0		67.4	60-120	4.37	24	
2-Chlorophenol	33.7	10.0	μg/L μg/L	50.0		72.5	23-134	2.77	61	
4-Chlorophenylphenylether	36.2	10.0	μg/L μg/L	50.0		76.0	25-158	1.39	61	
Di-n-butylphthalate	38.0	10.0	μg/L μg/L						47	
1,3-Dichlorobenzene	38.4	5.00	μg/L μg/L	50.0		76.9	10-120	0.0260		
1,4-Dichlorobenzene	25.0	5.00	μg/L μg/L	50.0		50.0	10-172	0.280	30	
	25.6			50.0		51.3	20-124	0.156	30	
1,2-Dichlorobenzene	26.1	5.00	μg/L	50.0		52.3	32-129	1.37	30	
3,3-Dichlorobenzidine	50.4	10.0	μg/L	50.0		101	10-262	2.68	108	
2,4-Dichlorophenol	37.4	10.0	μg/L	50.0		74.9	39-135	1.86	50	
Diethylphthalate	38.7	10.0	μg/L	50.0		77.4	10-120	0.596	100	
2,4-Dimethylphenol	32.2	10.0	μg/L	50.0		64.4	32-120	1.39	58	
Dimethylphthalate	41.7	10.0	μg/L	50.0		83.3	10-120	2.33	183	
4,6-Dinitro-2-methylphenol	35.4	10.0	μg/L	50.0		70.7	10-181	1.48	203	
2,4-Dinitrophenol	33.6	10.0	μg/L	50.0		67.3	10-191	1.11	132	
2,4-Dinitrotoluene	47.3	10.0	μg/L	50.0		94.6	39-139	0.968	42	
2,6-Dinitrotoluene	46.5	10.0	μg/L	50.0		93.0	50-158	0.0430	48	
Di-n-octylphthalate	33.7	10.0	μg/L	50.0		67.4	4-146	2.35	69	
1,2-Diphenylhydrazine/Azobenzene	36.4	10.0	μg/L	50.0		72.8	40-140	1.36	30	
Bis(2-Ethylhexyl)phthalate	32.7	10.0	μg/L	50.0		65.3	8-158	2.83	82	
Fluoranthene	44.3	5.00	μg/L	50.0		88.6	26-137	0.719	66	
Fluorene	41.4	5.00	μg/L	50.0		82.8	59-121	0.169	38	
Hexachlorobenzene	39.5	10.0	μg/L	50.0		79.1	10-152	1.32	55	
Hexachlorobutadiene	26.4	10.0	μg/L	50.0		52.8	24-120	4.19	62	
Hexachlorocyclopentadiene	10.2	10.0	μg/L	50.0		20.3 *	40-140	6.92	30	L-04, V-05
Hexachloroethane	24.2	10.0	$\mu \text{g/L}$	50.0		48.4	40-120	1.16	52	
Isophorone	40.7	10.0	$\mu \text{g/L}$	50.0		81.4	21-196	2.89	93	
Naphthalene	34.8	5.00	$\mu \text{g/L}$	50.0		69.6	21-133	0.461	65	
Nitrobenzene	37.9	10.0	$\mu g/L$	50.0		75.7	35-180	0.815	62	



#### QUALITY CONTROL

#### Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Satch B260252 - SW-846 3510C										
CS Dup (B260252-BSD1)				Prepared: 06	5/18/20 Analy	zed: 06/19/	20			
-Nitrophenol	43.3	10.0	μg/L	50.0		86.5	29-182	2.22	55	
-Nitrophenol	28.0	10.0	μg/L	50.0		55.9	10-132	1.04	131	
I-Nitrosodimethylamine	31.9	10.0	μg/L	50.0		63.7	40-140	5.78	30	V-06
I-Nitrosodiphenylamine/Diphenylamine	39.4	10.0	μg/L	50.0		78.7	40-140	1.39	30	
I-Nitrosodi-n-propylamine	42.5	10.0	μg/L	50.0		84.9	10-230	4.11	87	
-Methylnaphthalene	37.9	5.00	μg/L	50.0		75.9	40-140	0.661	30	
henanthrene	40.4	5.00	μg/L	50.0		80.7	54-120	0.149	39	
-Methylphenol	36.3	10.0	$\mu g/L$	50.0		72.6	40-140	4.16	30	
henol	19.9	10.0	μg/L	50.0		39.8	5-120	4.90	64	
/4-Methylphenol	37.3	20.0	μg/L	50.0		74.6	40-140	3.57	30	
yrene	35.2	5.00	μg/L	50.0		70.4	52-120	2.10	49	
,2,4-Trichlorobenzene	29.1	5.00	μg/L	50.0		58.2	44-142	0.241	50	
,4,6-Trichlorophenol	39.6	10.0	μg/L	50.0		79.2	37-144	0.0252	58	
•										
urrogate: 2-Fluorophenol	97.4		μg/L	200		48.7	15-110			
urrogate: Phenol-d6	78.9		μg/L	200		39.5	15-110			
urrogate: Nitrobenzene-d5	75.5 85.2		μg/L	100		75.5 85.2	30-130			
urrogate: 2-Fluorobiphenyl	85.2 157		μg/L	100		85.2 78.6	30-130			
urrogate: 2,4,6-Tribromophenol	157		μg/L	200		78.6	15-110			
urrogate: p-Terphenyl-d14	68.2		μg/L	100		68.2	30-130			
Latrix Spike (B260252-MS1) cenaphthene		rce: 20F0701- 5.32			5/18/20 Analy					MS-09
•	113		μg/L	53.2	103					MS-09
cenaphthylene	38.0	5.32	μg/L	53.2	ND		33-145			
nthracene	43.4	5.32	μg/L	53.2	5.05	72.1	27-133			MG 00 M 0
enzidine	16.4	21.3	μg/L	53.2	ND	30.8 *	40-140			MS-09, V-0 V-05, V-3
enzo(g,h,i)perylene	32.8	5.32	$\mu g/L$	53.2	ND	61.7	10-219			
Bromophenylphenylether	38.4	10.6	$\mu g/L$	53.2	ND	72.1	53-127			
tutylbenzylphthalate	37.4	10.6	$\mu g\!/\!L$	53.2	ND	70.4	10-152			
-Chloro-3-methylphenol	44.7	10.6	$\mu g\!/\!L$	53.2	ND	84.0	22-147			
sis(2-chloroethyl)ether	36.5	10.6	$\mu g\!/\!L$	53.2	ND	68.7	12-158			
is(2-chloroisopropyl)ether	38.1	10.6	$\mu g/L$	53.2	ND	71.7	36-166			
-Chloronaphthalene	31.2	10.6	$\mu g/L$	53.2	ND	58.7 *	60-120			MS-09
-Chlorophenol	36.3	10.6	$\mu g/L$	53.2	ND	68.3	23-134			
-Chlorophenylphenylether	37.7	10.6	μg/L	53.2	ND		25-158			
vi-n-butylphthalate	38.0	10.6	μg/L	53.2	ND	71.4	10-120			
,3-Dichlorobenzene	25.8	5.32	μg/L	53.2	ND	48.5	10-172			
,4-Dichlorobenzene	26.2	5.32	μg/L	53.2	ND	49.2	20-124			
,2-Dichlorobenzene	22.8	5.32	μg/L	53.2	ND	42.9	32-129			
,3-Dichlorobenzidine	42.2	10.6	μg/L	53.2	ND		10-262			
,4-Dichlorophenol	39.1	10.6	μg/L	53.2	ND		39-135			
Diethylphthalate	37.6	10.6	μg/L	53.2	ND	70.6	10-120			
,4-Dimethylphenol	218	10.6	μg/L	53.2	267	-92.2 *				MS-19
Dimethylphthalate	38.8	10.6	μg/L	53.2	ND		10-120			
6-Dinitro-2-methylphenol	37.0	10.6	μg/L	53.2	ND	69.6	10-181			
,4-Dinitrophenol	36.9	10.6	μg/L	53.2	ND ND	69.4	10-191			
	43.4	10.6	μg/L	53.2	ND ND		39-139			
.4-Dinitrotoluene	77.7		μg/L	53.2	ND ND		50-158			
	45 O	10.6				U T.J	20-130			
,6-Dinitrotoluene	45.0	10.6 10.6								
,4-Dinitrotoluene ,6-Dinitrotoluene bi-n-octylphthalate	36.7	10.6	$\mu g/L$	53.2	ND	69.0	4-146			
,6-Dinitrotoluene bi-n-octylphthalate ,2-Diphenylhydrazine/Azobenzene	36.7 37.5	10.6 10.6	μg/L μg/L	53.2 53.2	ND ND	69.0 70.5	4-146 40-140			
,6-Dinitrotoluene bi-n-octylphthalate	36.7	10.6	$\mu g/L$	53.2	ND	69.0 70.5 61.9	4-146			

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#### QUALITY CONTROL

Spike

Source

%REC

RPD

#### Semivolatile Organic Compounds by - GC/MS - Quality Control

Reporting

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	!	%REC Limits	RPD	RPD Limit	Notes
Batch B260252 - SW-846 3510C											
Matrix Spike (B260252-MS1)	Sour	rce: 20F0701-0	)1	Prepared: 06	5/18/20 Analyz	zed: 06/1	9/20				
Hexachlorobenzene	41.1	10.6	$\mu \text{g/L}$	53.2	ND	77.3		10-152			
Iexachlorobutadiene	29.6	10.6	$\mu g/L$	53.2	ND	55.6		24-120			
<b>Iexachlorocyclopentadiene</b>	10.9	10.6	μg/L	53.2	ND	20.4	*	40-140			MS-09, V-0
Hexachloroethane	31.3	10.6	$\mu \text{g/L}$	53.2	ND	58.8		40-120			
sophorone	41.9	10.6	$\mu g \! / \! L$	53.2	ND	78.9		21-196			
Naphthalene	414	5.32	$\mu g\!/\!L$	53.2	1790	-2590	*	21-133			MS-19
Vitrobenzene	37.2	10.6	$\mu g\!/\!L$	53.2	ND	69.9		35-180			
-Nitrophenol	42.1	10.6	$\mu g\!/\!L$	53.2	ND	79.1		29-182			
-Nitrophenol	29.4	10.6	$\mu g\!/\!L$	53.2	ND	55.3		10-132			
N-Nitrosodimethylamine	32.2	10.6	$\mu \text{g/L}$	53.2	ND	60.5		40-140			V-06
N-Nitrosodiphenylamine/Diphenylamine	39.6	10.6	$\mu \text{g/L}$	53.2	ND	74.4		40-140			
N-Nitrosodi-n-propylamine	44.4	10.6	μg/L	53.2	ND	83.5		10-230			
-Methylnaphthalene	166	5.32	μg/L	53.2	240	-138	*	40-140			MS-19
Phenanthrene	57.2	5.32	μg/L	53.2	29.4	52.3	*	54-120			MS-22
-Methylphenol	41.1	10.6	μg/L	53.2	3.11	71.3		40-140			
Phenol	36.0	10.6	μg/L	53.2	4.08	60.1		5-120			
/4-Methylphenol	53.1	21.3	μg/L	53.2	12.8	75.6		40-140			
Pyrene	39.4	5.32	μg/L	53.2	2.31	69.8		52-120			
2.4-Trichlorobenzene	31.2	5.32	μg/L	53.2	ND	58.7		44-142			
2,4,6-Trichlorophenol	39.6	10.6	μg/L	53.2	ND ND	74.4		37-144			
*		10.0			ND						
surrogate: 2-Fluorophenol	101		μg/L	213		47.6		15-110			
surrogate: Phenol-d6	88.4		μg/L	213		41.6		15-110			
Surrogate: Nitrobenzene-d5	74.2		μg/L	106		69.7		30-130			
surrogate: 2-Fluorobiphenyl	84.5		μg/L	106		79.4		30-130			
Surrogate: 2,4,6-Tribromophenol	171		μg/L	213		80.5		15-110			
Surrogate: p-Terphenyl-d14	77.4		μg/L	106		72.8		30-130			
and property and											
Matrix Spike Dup (B260252-MSD1)		rce: 20F0701-0			5/18/20 Analyz						1.00.00
Matrix Spike Dup (B260252-MSD1)	125	5.26	μg/L	52.6	103	42.5		47-145	9.89	48	MS-09
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene		5.26 5.26	μg/L μg/L	52.6 52.6	103 ND	<b>42.5</b> 71.1	*	33-145	1.48	74	MS-09
Matrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene	125	5.26 5.26 5.26	μg/L μg/L μg/L	52.6	103	42.5	*				
Matrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene	125 37.4	5.26 5.26	μg/L μg/L	52.6 52.6	103 ND	<b>42.5</b> 71.1	*	33-145	1.48	74	
Matrix Spike Dup (B260252-MSD1)	125 37.4 44.4	5.26 5.26 5.26	μg/L μg/L μg/L	52.6 52.6 52.6	103 ND 5.05	<b>42.5</b> 71.1 74.8	*	33-145 27-133	1.48	74 66	V-04, MS-09
Matrix Spike Dup (B260252-MSD1)  Acenaphthene Acenaphthylene Anthracene Benzidine  Benzo(g,h,i)perylene	125 37.4 44.4 10.2	5.26 5.26 5.26 21.1	μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6	103 ND 5.05 ND	<b>42.5</b> 71.1 74.8 <b>19.4</b>	*	33-145 27-133 40-140	1.48 2.27	74 66 30	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)peryleneBromophenylphenylether Butylbenzylphthalate	125 37.4 44.4 10.2 33.3	5.26 5.26 5.26 21.1 5.26	μg/L μg/L μg/L μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	<b>42.5</b> 71.1 74.8 <b>19.4</b> 63.3	*	33-145 27-133 40-140 10-219	1.48 2.27	74 66 30 97	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)peryleneBromophenylphenylether	125 37.4 44.4 10.2 33.3 35.5	5.26 5.26 5.26 21.1 5.26 10.5	μg/L μg/L μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND ND	<b>42.5</b> 71.1 74.8 <b>19.4</b> 63.3 67.5	*	33-145 27-133 40-140 10-219 53-127	1.48 2.27 1.50 7.65	74 66 30 97 43	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)peryleneBromophenylphenylether Butylbenzylphthalate	125 37.4 44.4 10.2 33.3 35.5 36.9	5.26 5.26 5.26 21.1 5.26 10.5	μg/L μg/L μg/L μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND ND ND	<b>42.5</b> 71.1 74.8 <b>19.4</b> 63.3 67.5 70.1	*	33-145 27-133 40-140 10-219 53-127 10-152	1.48 2.27 1.50 7.65 1.43	74 66 30 97 43 60	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Accenaphthene Accenaphthylene Anthracene Benzidine Benzidine Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9	5.26 5.26 5.26 21.1 5.26 10.5 10.5	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND ND ND ND	<b>42.5</b> 71.1 74.8 <b>19.4</b> 63.3 67.5 70.1 89.1	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147	1.48 2.27 1.50 7.65 1.43 4.86	74 66 30 97 43 60 73	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Accenaphthene Accenaphthylene Anthracene Benzidine Benzo(g,h,i)peryleneBromophenylphenylether ButylbenzylphthalateChloro-3-methylphenol Bis(2-chloroethyl)ether	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND ND ND ND	<b>42.5</b> 71.1 74.8 <b>19.4</b> 63.3 67.5 70.1 89.1 65.9	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158	1.48 2.27 1.50 7.65 1.43 4.86 5.19	74 66 30 97 43 60 73 108	V-04, MS-09
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)perylene Bromophenylphenylether ButylbenzylphthalateChloro-3-methylphenol Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3	74 66 30 97 43 60 73 108 76	V-04, MS-09 V-05, V-35
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)perylene Bromophenylphenylether ButylbenzylphthalateChloro-3-methylphenol Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)etherChloronaphthalene	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02	74 66 30 97 43 60 73 108 76 24	V-04, MS-09 V-05, V-35
Attrix Spike Dup (B260252-MSD1)  Acenaphthene Acenaphthylene Anthracene Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol -Chlorophenylphenylether	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8	74 66 30 97 43 60 73 108 76 24	V-04, MS-09 V-05, V-35
Attrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol -Chlorophenol -Chlorophenylphenylether Di-n-butylphthalate	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06	74 66 30 97 43 60 73 108 76 24 61	V-04, MS-09 V-05, V-35
Attrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroisopropyl)ether Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol -Chlorophenol -Chlorophenylphenylether Di-n-butylphthalate ,3-Dichlorobenzene	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95	74 66 30 97 43 60 73 108 76 24 61 61 47	V-04, MS-09 V-05, V-35
Attrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol -Chlorophenylphenylether Di-n-butylphthalate ,3-Dichlorobenzene ,4-Dichlorobenzene	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 10.5 5.26	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6 42.6	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0	74 66 30 97 43 60 73 108 76 24 61 61 47 30	V-04, MS-09, V-05, V-35
Attrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol -Chlorophenylphenylether Di-n-butylphthalate 3-Dichlorobenzene 4-Dichlorobenzene 2-Dichlorobenzene	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 5.26 5.26	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6 52.6 52.6 52.6 52.6 52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 67.4 73.6 42.6 43.2 36.2	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 30	V-04, MS-09 V-05, V-35
Attrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene Benzo(g,h,i)perylene Benzo(g,h,i)perylen	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1 43.2	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 5.26 5.26 5.26 5.26 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 67.4 73.6 42.6 43.2 36.2 82.1	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129 10-262	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9 2.44	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 30 108	V-04, MS-09 V-05, V-35
Atrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Anthracene Benzo(g,h,i)perylene	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1 43.2 40.2	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6 42.6 43.2 36.2 82.1 76.5	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129 10-262 39-135	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9 2.44 2.92	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 30 108 50	V-04, MS-09 V-05, V-35
Atrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Benzo(g,h,i)perylene Ben	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1 43.2 40.2 35.7	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6 42.6 43.2 36.2 82.1 76.5 67.8	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129 10-262 39-135 10-120	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9 2.44 2.92 5.16	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 108 50 100	V-04, MS-09 V-05, V-35
Atrix Spike Dup (B260252-MSD1)  Accenaphthene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Accenaphthylene Benzo(g,h,i)perylene Benzo(g,h,i)perylen	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1 43.2 40.2 35.7 243	5.26 5.26 5.26 21.1 5.26 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6 42.6 43.2 36.2 82.1 76.5 67.8 -44.3	*	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129 10-262 39-135 10-120 32-120	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9 2.44 2.92 5.16 11.1	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 108 50 100 58	V-04, MS-09 V-05, V-35
Matrix Spike Dup (B260252-MSD1) Acenaphthene Acenaphthylene Anthracene Benzidine Benzo(g,h,i)perylene -Bromophenylphenylether Butylbenzylphthalate -Chloro-3-methylphenol Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether -Chloronaphthalene -Chlorophenol	125 37.4 44.4 10.2 33.3 35.5 36.9 46.9 34.7 32.4 30.3 31.3 35.5 38.7 22.4 22.7 19.1 43.2 40.2 35.7	5.26 5.26 5.26 21.1 5.26 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L Hg/L	52.6 52.6	103 ND 5.05 ND	42.5 71.1 74.8 19.4 63.3 67.5 70.1 89.1 65.9 61.5 57.5 59.5 67.4 73.6 42.6 43.2 36.2 82.1 76.5 67.8	* *	33-145 27-133 40-140 10-219 53-127 10-152 22-147 12-158 36-166 60-120 23-134 25-158 10-120 10-172 20-124 32-129 10-262 39-135 10-120	1.48 2.27 1.50 7.65 1.43 4.86 5.19 16.3 3.02 14.8 6.06 1.95 14.0 14.1 17.9 2.44 2.92 5.16	74 66 30 97 43 60 73 108 76 24 61 61 47 30 30 108 50 100	V-04, MS-09, V-05, V-35

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Surrogate: p-Terphenyl-d14

#### 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### QUALITY CONTROL

#### Semivolatile Organic Compounds by - GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260252 - SW-846 3510C										
Matrix Spike Dup (B260252-MSD1)	Sour	ce: 20F0701-	01	Prepared: 06	5/18/20 Analy:	zed: 06/19/	20			
2,4-Dinitrotoluene	43.4	10.5	μg/L	52.6	ND	82.4	39-139	0.0824	42	
2,6-Dinitrotoluene	42.3	10.5	μg/L	52.6	ND	80.3	50-158	6.18	48	
Di-n-octylphthalate	36.0	10.5	μg/L	52.6	ND	68.4	4-146	1.93	69	
1,2-Diphenylhydrazine/Azobenzene	35.7	10.5	μg/L	52.6	ND	67.8	40-140	4.88	30	
Bis(2-Ethylhexyl)phthalate	32.8	10.5	μg/L	52.6	ND	62.3	8-158	0.446	82	
Fluoranthene	46.6	5.26	μg/L	52.6	4.12	80.8	26-137	10.5	66	
Fluorene	72.3	5.26	μg/L	52.6	38.6	64.1	59-121	7.02	38	
Hexachlorobenzene	40.0	10.5	μg/L	52.6	ND	76.0	10-152	2.75	55	
Hexachlorobutadiene	30.2	10.5	μg/L	52.6	ND	57.4	24-120	2.20	62	
Hexachlorocyclopentadiene	10.8	10.5	μg/L	52.6	ND	20.6 *	40-140	0.375	30	MS-09, V-05
Hexachloroethane	27.7	10.5	μg/L	52.6	ND	52.6	40-120	12.1	52	
Isophorone	42.1	10.5	$\mu g/L$	52.6	ND	80.0	21-196	0.327	93	
Naphthalene	1260	5.26	μg/L	52.6	1790	-1000 *	21-133	101	* 65	MS-19
Nitrobenzene	38.7	10.5	$\mu g/L$	52.6	ND	73.5	35-180	3.88	62	
2-Nitrophenol	42.7	10.5	$\mu g/L$	52.6	ND	81.2	29-182	1.56	55	
4-Nitrophenol	30.1	10.5	$\mu g/L$	52.6	ND	57.3	10-132	2.50	131	
N-Nitrosodimethylamine	27.1	10.5	$\mu g/L$	52.6	ND	51.5	40-140	17.1	30	V-06
N-Nitrosodiphenylamine/Diphenylamine	38.9	10.5	$\mu g/L$	52.6	ND	73.9	40-140	1.62	30	
N-Nitrosodi-n-propylamine	37.4	10.5	$\mu g/L$	52.6	ND	71.1	10-230	17.0	87	
2-Methylnaphthalene	250	5.26	$\mu g/L$	52.6	240	19.2 *	40-140	40.1	* 30	MS-19
Phenanthrene	63.9	5.26	$\mu g/L$	52.6	29.4	65.5	54-120	11.0	39	
2-Methylphenol	33.1	10.5	$\mu g/L$	52.6	3.11	56.9	40-140	21.6	30	
Phenol	24.3	10.5	$\mu g/L$	52.6	4.08	38.5	5-120	38.8	64	
3/4-Methylphenol	42.8	21.1	$\mu g \! / \! L$	52.6	12.8	56.9	40-140	21.5	30	
Pyrene	35.6	5.26	$\mu g \! / \! L$	52.6	2.31	63.3	52-120	10.3	49	
1,2,4-Trichlorobenzene	31.5	5.26	$\mu g \! / \! L$	52.6	ND	59.9	44-142	1.07	50	
2,4,6-Trichlorophenol	38.2	10.5	$\mu g/L$	52.6	ND	72.6	37-144	3.43	58	
Surrogate: 2-Fluorophenol	87.0		μg/L	211		41.3	15-110			
Surrogate: Phenol-d6	69.2		$\mu g/L$	211		32.9	15-110			
Surrogate: Nitrobenzene-d5	77.0		μg/L	105		73.1	30-130			
Surrogate: 2-Fluorobiphenyl	81.8		μg/L	105		77.7	30-130			
Surrogate: 2,4,6-Tribromophenol	169		$\mu g/L$	211		80.4	15-110			
G . T 1 1114			-	40.5			20.420			

 $\mu g/L$ 

105

69.1

30-130

65.6



#### QUALITY CONTROL

#### Polychlorinated Biphenyls By GC/ECD - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B260167 - SW-846 3510C										
Blank (B260167-BLK1)				Prepared: 06	/17/20 Anal	yzed: 06/18/2	20			
Aroclor-1016	ND	0.100	μg/L							
Aroclor-1016 [2C]	ND	0.100	μg/L							
Aroclor-1221	ND	0.100	μg/L							
Aroclor-1221 [2C]	ND	0.100	μg/L							
Aroclor-1232	ND	0.100	μg/L							
Aroclor-1232 [2C]	ND	0.100	μg/L							
Aroclor-1242	ND	0.100	μg/L							
Aroclor-1242 [2C]	ND	0.100	μg/L							
Aroclor-1248	ND	0.100	μg/L							
Aroclor-1248 [2C]	ND	0.100	$\mu g/L$							
Aroclor-1254	ND	0.100	μg/L							
Aroclor-1254 [2C]	ND	0.100	μg/L							
Aroclor-1260	ND	0.100	μg/L							
Aroclor-1260 [2C]	ND	0.100	$\mu g/L$							
Surrogate: Decachlorobiphenyl	0.869		μg/L	1.00		86.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	1.02		μg/L	1.00		102	30-150			
Surrogate: Tetrachloro-m-xylene	0.706		μg/L	1.00		70.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.805		$\mu g/L$	1.00		80.5	30-150			
LCS (B260167-BS1)				Prepared: 06	/17/20 Anal	yzed: 06/18/2	20			
Aroclor-1016	0.407	0.200	μg/L	0.500		81.3	50-140			
Aroclor-1016 [2C]	0.486	0.200	μg/L	0.500		97.2	50-140			
Aroclor-1260	0.381	0.200	μg/L	0.500		76.1	8-140			
Aroclor-1260 [2C]	0.465	0.200	$\mu g/L$	0.500		93.0	8-140			
Surrogate: Decachlorobiphenyl	1.77		μg/L	2.00		88.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.10		$\mu g/L$	2.00		105	30-150			
Surrogate: Tetrachloro-m-xylene	1.43		$\mu g/L$	2.00		71.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.71		$\mu g/L$	2.00		85.4	30-150			
LCS Dup (B260167-BSD1)				Prepared: 06	/17/20 Anal	yzed: 06/18/2	20			
Aroclor-1016	0.375	0.200	μg/L	0.500		75.0	50-140	8.07		
Aroclor-1016 [2C]	0.454	0.200	$\mu g/L$	0.500		90.8	50-140	6.71		
Aroclor-1260	0.359	0.200	$\mu g/L$	0.500		71.8	8-140	5.82		
Aroclor-1260 [2C]	0.442	0.200	$\mu g/L$	0.500		88.3	8-140	5.12		
Surrogate: Decachlorobiphenyl	1.72		μg/L	2.00		86.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	2.03		$\mu g/L$	2.00		101	30-150			
Surrogate: Tetrachloro-m-xylene	1.34		$\mu g/L$	2.00		66.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	1.60		$\mu g/L$	2.00		79.9	30-150			



#### QUALITY CONTROL

#### Metals Analyses (Total) - Quality Control

		Units	Level	Result	%REC	Limits	RPD	RPD Limit	Notes
		· -					· ·		
			Prepared: 06	5/16/20 Analy	yzed: 06/17/2	20			
ND	0.050	mg/L							
ND	1.4	mg/L							
			Prepared: 06	5/16/20 Analy	yzed: 06/17/2	20			
4.17	0.050	mg/L	4.00		104	85-115			
27	1.4	mg/L	26.4		102	85-115			
			Prepared: 06	5/16/20 Analy	yzed: 06/17/2	20			
4.14	0.050	mg/L	4.00		104	85-115	0.754	20	
27	1.4	mg/L	26.4		102	85-115	0.805	20	
			Prepared: 06	5/16/20 Anal	yzed: 06/17/2	20			
ND	1.0	μg/L		<u> </u>					
	0.80								
ND	0.20	μg/L							
ND	1.0	μg/L							
ND	1.0	μg/L							
ND	0.50	μg/L							
ND	5.0	$\mu g/L$							
ND	5.0	$\mu g/L$							
ND	0.20	$\mu g/L$							
ND	10	$\mu g/L$							
			Prepared: 06	5/16/20 Analy	yzed: 06/17/2	20			
493	10	μg/L	500		98.5	85-115			
518	8.0	$\mu g/L$	500		104	85-115			
489	2.0	$\mu \text{g/L}$	500		97.9	85-115			
497	10	$\mu \text{g/L}$	500		99.5	85-115			
937	10	$\mu \text{g}/L$	1000		93.7	85-115			
486	5.0	$\mu g/L$	500		97.2	85-115			
474	50	$\mu \text{g/L}$	500		94.8	85-115			
502	50	$\mu \text{g/L}$	500		100	85-115			
490	2.0		500		97.9	85-115			
996	100	μg/L	1000		99.6	85-115			
				5/16/20 Analy	,				
498			500		99.5	85-115		20	
521									
492									
495									
942									
490									
491	2.0	μg/L μg/L	500 1000		98.2 99.1	85-115 85-115	0.261 0.492	20 20	
	ND  4.17 27  4.14 27  ND	ND 1.4  4.17 0.050 27 1.4  4.14 0.050 27 1.4   ND ND 0.80 ND 0.20 ND 1.0 ND 1.0 ND 0.50 ND 5.0 ND 5.0 ND 10  493 10 518 8.0 489 2.0 497 10 937 10 486 5.0 474 50 502 50 490 2.0 996 100  498 10 521 8.0 492 2.0 495 10 942 10 490 5.0 476 50 503 50	ND 1.4 mg/L  4.17 0.050 mg/L 27 1.4 mg/L  4.14 0.050 mg/L 27 1.4 mg/L  ND 1.0 μg/L ND 0.80 μg/L ND 1.0 μg/L ND 1.0 μg/L ND 5.0 μg/L ND 5.0 μg/L ND 5.0 μg/L ND 10 μg/L ND 10 μg/L ND 10 μg/L ND 5.0 μg/L ND 5.0 μg/L ND 10 μg/L 27 10 μg/L 493 10 μg/L 489 2.0 μg/L 497 10 μg/L 497 10 μg/L 498 5.0 μg/L 490 2.0 μg/L 490 2.0 μg/L 490 2.0 μg/L 490 2.0 μg/L 491 100 μg/L 492 2.0 μg/L 492 2.0 μg/L 492 2.0 μg/L 493 10 μg/L 494 10 μg/L 495 10 μg/L 496 5.0 μg/L 497 5.0 μg/L 498 10 μg/L 499 5.0 μg/L 490 5.0 μg/L	ND   0.050   mg/L   mg/L	ND	ND	ND	ND	ND



#### QUALITY CONTROL

#### Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260158 - EPA 245.1										
Blank (B260158-BLK1)				Prepared: 06	/17/20 Analy	yzed: 06/18/2	20			
Mercury	ND	0.00010	mg/L							
LCS (B260158-BS1)				Prepared: 06	/17/20 Analy	yzed: 06/18/2	20			
Mercury	0.00385	0.00010	mg/L	0.00400		96.2	85-115			
LCS Dup (B260158-BSD1)				Prepared: 06	/17/20 Analy	yzed: 06/18/2	0			
Mercury	0.00391	0.00010	mg/L	0.00400		97.7	85-115	1.56	20	



#### QUALITY CONTROL

#### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B260040 - SM21-22 3500 Cr B										
Blank (B260040-BLK1)				Prepared & A	Analyzed: 0	6/15/20				
Hexavalent Chromium	ND	0.0040	mg/L							
LCS (B260040-BS1)				Prepared & A	Analyzed: 0	6/15/20				
Hexavalent Chromium	0.10	0.0040	mg/L	0.100		101	90-115			
LCS Dup (B260040-BSD1)				Prepared & A	Analyzed: 0	6/15/20				
Hexavalent Chromium	0.10	0.0040	mg/L	0.100		102	90-115	1.21	11	
Batch B260043 - SM21-22 4500 CL G										
Blank (B260043-BLK1)				Prepared & A	Analyzed: 0	6/15/20				
Chlorine, Residual	ND	0.020	mg/L							
LCS (B260043-BS1)				Prepared & A	Analyzed: 0	6/15/20				
Chlorine, Residual	0.60	0.020	mg/L	0.614		98.5	85.3-130			
LCS Dup (B260043-BSD1)				Prepared & A	Analyzed: 0	6/15/20				
Chlorine, Residual	0.66	0.020	mg/L	0.614		108	85.3-130	8.80	13.6	
Duplicate (B260043-DUP1)	Sour	ce: 20F0701-	01	Prepared & A	Analyzed: 0	6/15/20				
Chlorine, Residual	ND	0.020	mg/L		N	D		NC	29.4	
Matrix Spike (B260043-MS1)	Sour	ce: 20F0701-	01	Prepared & A	Analyzed: 0	6/15/20				
Chlorine, Residual	ND	0.020	mg/L	1.00	N	D	* 10-169			MS-08
Batch B260050 - EPA 1664B										
Blank (B260050-BLK1)				Prepared & A	Analyzed: 0	6/16/20				
Silica Gel Treated HEM (SGT-HEM)	ND	1.4	mg/L							
LCS (B260050-BS1)				Prepared & A	Analyzed: 0	6/16/20				
Silica Gel Treated HEM (SGT-HEM)	11		mg/L	10.0		109	64-132			
Batch B260061 - EPA 350.1										
Blank (B260061-BLK1)		·		Prepared: 06	/16/20 Ana	lyzed: 06/17	7/20			
Ammonia as N	ND	0.10	mg/L							
LCS (B260061-BS1)				Prepared: 06	/16/20 Ana	lyzed: 06/17	7/20			
Ammonia as N	2.2	0.10	mg/L	2.00		108	90-110			



#### QUALITY CONTROL

#### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B260061 - EPA 350.1										
LCS Dup (B260061-BSD1)				Prepared: 06	/16/20 Analy	yzed: 06/17/	20			
Ammonia as N	2.1	0.10	mg/L	2.00		105	90-110	2.90	20	
Batch B260148 - SM21-22 2540D										
Blank (B260148-BLK1)				Prepared &	Analyzed: 06	/17/20				
Total Suspended Solids	ND	2.5	mg/L							
LCS (B260148-BS1)				Prepared &	Analyzed: 06	/17/20				
Total Suspended Solids	142	10	mg/L	200		71.0	57.4-123			
Batch B260174 - EPA 300.0										
Blank (B260174-BLK1)				Prepared &	Analyzed: 06	/17/20				
Chloride	ND	1.0	mg/L							
LCS (B260174-BS1)				Prepared &	Analyzed: 06	/17/20				
Chloride	9.9		mg/L	10.0		98.9	90-110			
LCS Dup (B260174-BSD1)				Prepared &	Analyzed: 06	/17/20				
Chloride	9.9		mg/L	10.0		98.8	90-110	0.136	20	



#### QUALITY CONTROL

#### **Drinking Water Organics EPA 504.1 - Quality Control**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B260377 - EPA 504 water										
Blank (B260377-BLK1)				Prepared &	Analyzed: 06	/19/20				
1,2-Dibromoethane (EDB) [2C]	ND	0.021	μg/L							
Surrogate: 1,3-Dibromopropane [2C]	1.03		μg/L	1.05		97.8	70-130			
LCS (B260377-BS1)				Prepared &	Analyzed: 06	/19/20				
1,2-Dibromoethane (EDB) [2C]	0.217	0.021	μg/L	0.257		84.4	70-130			
Surrogate: 1,3-Dibromopropane [2C]	1.17		μg/L	1.03		114	70-130			
LCS Dup (B260377-BSD1)				Prepared &	Analyzed: 06	5/19/20				
1,2-Dibromoethane (EDB) [2C]	0.191	0.021	μg/L	0.262		72.8	70-130	12.7		
Surrogate: 1,3-Dibromopropane [2C]	1.15		μg/L	1.05		110	70-130			



# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS

608.3

Lab Sample ID:	B260167-BS1		Date(s) Analyzed:	06/18/2020	06/18/2020	
Instrument ID (1):	ECD1	-	Instrument ID (2):	ECD1		
GC Column (1):	ID:	(mm)	GC Column (2):		ID: (mr	n

ANALYTE	COL	RT	RT WINDOW FROM TO		CONCENTRATION	%RPD
7.10.11.2	002	111			OONOLIVITUUTION	
Aroclor-1016	1	0.000	0.000	0.000	0.407	
	2	0.000	0.000	0.000	0.486	17.0
Aroclor-1260	1	0.000	0.000	0.000	0.381	
	2	0.000	0.000	0.000	0.465	20.1



# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup	

608.3

Lab Sample ID:	B260167-BSD1		Date(s) Analyzed:	06/18/2020	06/18/2020	)
Instrument ID (1):	ECD1		Instrument ID (2):	ECD1		
GC Column (1):	ID:	(mm)	GC Column (2):		ID:	(mm

ANALYTE	COL	RT	RT WI	NDOW	CONCENTRATION	%RPD	
7.10.12.12	002		FROM TO		00110211111111111111		
Aroclor-1016	1	0.000	0.000	0.000	0.375		
	2	0.000	0.000	0.000	0.454	17.7	
Aroclor-1260	1	0.000	0.000	0.000	0.359		
	2	0.000	0.000	0.000	0.442	20.4	



# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

La	b Sample ID: B26	0377-BS1		D	Date(s) Analyzed: 06/19/2020			06/1	06/19/2020		
Instrument ID (1):			In	Instrument ID (2):							
G	C Column (1):	ID:	(m	nm) G	) GC Column (2):			ID:	(mm)		
	ANALYTE	COL	RT	RT W	T WINDOW		/INDOW CONCENTRATIO		ENTRATION	%RPD	
		F		FROM	ТО						
		2	3.314	0.000	0.000		0.217	13.3	'		



# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

1.00 D	
LCS Dup	

EPA 504.1

La	b Sample ID: B26	0377-BSD	1	Date(s) Analyzed: 06/19/2020		06/19/2020			
Instrument ID (1): Instrument ID (2):									
G	C Column (1):	ID:	(m	nm) G	) GC Column (2):			ID:	(mm)
	ANALYTE	COL	RT	RT WI	T WINDOW		ENTRATION	%RPD	
				FROM	ТО				
	_	2	3.315	0.000	0.000		0.191	5.9	•



#### FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-04	Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits Reported value for this compound is likely to be biased on the low side.
MS-08	Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-09	Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.
RL-11	Elevated reporting limit due to high concentration of target compounds.
S-01	The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.
V-04	Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.



#### CERTIFICATIONS

#### Certified Analyses included in this Report

Analyte	Certifications
608.3 in Water	
Aroclor-1016	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1016 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1221	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1221 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1232	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1232 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1242	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1242 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1248	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1248 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1254	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1254 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1260	CT,MA,NH,NY,RI,NC,ME,VA
Aroclor-1260 [2C]	CT,MA,NH,NY,RI,NC,ME,VA
624.1 in Water	
Acetone	CT,NY,MA,NH
tert-Amyl Methyl Ether (TAME)	MA
Benzene	CT,NY,MA,NH,RI,NC,ME,VA
Bromodichloromethane	CT,NY,MA,NH,RI,NC,ME,VA
Bromoform	CT,NY,MA,NH,RI,NC,ME,VA
Bromomethane	CT,NY,MA,NH,RI,NC,ME,VA
tert-Butyl Alcohol (TBA)	NY,MA
Carbon Tetrachloride	CT,NY,MA,NH,RI,NC,ME,VA
Chlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
Chlorodibromomethane	CT,NY,MA,NH,RI,NC,ME,VA
Chloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Chloroform	CT,NY,MA,NH,RI,NC,ME,VA
Chloromethane	CT,NY,MA,NH,RI,NC,ME,VA
1,2-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,3-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,4-Dichlorobenzene	CT,NY,MA,NH,RI,NC,ME,VA
1,2-Dichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
1,1-Dichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
1,1-Dichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
trans-1,2-Dichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
1,2-Dichloropropane	CT,NY,MA,NH,RI,NC,ME,VA
cis-1,3-Dichloropropene	CT,NY,MA,NH,RI,NC,ME,VA
1,4-Dioxane	MA
trans-1,3-Dichloropropene	CT,NY,MA,NH,RI,NC,ME,VA
Ethanol	NY,MA,NH
Ethylbenzene	CT,NY,MA,NH,RI,NC,ME,VA
Methyl tert-Butyl Ether (MTBE)	NY,MA,NH,NC
Methylene Chloride	CT,NY,MA,NH,RI,NC,ME,VA
Naphthalene	NY,MA,NC
1,1,2,2-Tetrachloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Tetrachloroethylene	CT,NY,MA,NH,RI,NC,ME,VA



#### CERTIFICATIONS

#### Certified Analyses included in this Report

Certified Analyses included in this Report	
Analyte	Certifications
624.1 in Water	
Toluene	CT,NY,MA,NH,RI,NC,ME,VA
1,2,4-Trichlorobenzene	MA,NC
1,1,1-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
1,1,2-Trichloroethane	CT,NY,MA,NH,RI,NC,ME,VA
Trichloroethylene	CT,NY,MA,NH,RI,NC,ME,VA
Trichlorofluoromethane (Freon 11)	CT,NY,MA,NH,RI,NC,ME,VA
Vinyl Chloride	CT,NY,MA,NH,RI,NC,ME,VA
m+p Xylene	CT,NY,MA,NH,RI,NC
o-Xylene	CT,NY,MA,NH,RI,NC
625.1 in Water	
Acenaphthene	CT,MA,NH,NY,NC,RI,ME,VA
Acenaphthylene	CT,MA,NH,NY,NC,RI,ME,VA
Anthracene	CT,MA,NH,NY,NC,RI,ME,VA
Benzidine	CT,MA,NH,NY,NC,RI,ME,VA
Benzo(g,h,i)perylene	CT,MA,NH,NY,NC,RI,ME,VA
4-Bromophenylphenylether	CT,MA,NH,NY,NC,RI,ME,VA
Butylbenzylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4-Chloro-3-methylphenol	CT,MA,NH,NY,NC,RI,VA
Bis(2-chloroethyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
Bis(2-chloroisopropyl)ether	CT,MA,NH,NY,NC,RI,ME,VA
2-Chloronaphthalene	CT,MA,NH,NY,NC,RI,ME,VA
2-Chlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
4-Chlorophenylphenylether	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-butylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
1,3-Dichlorobenzene	MA,NC
1,4-Dichlorobenzene	MA,NC
1,2-Dichlorobenzene	MA,NC
3,3-Dichlorobenzidine	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dichlorophenol	CT,MA,NH,NY,NC,RI,ME,VA
Diethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dimethylphenol	CT,MA,NH,NY,NC,RI,ME,VA
Dimethylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
4,6-Dinitro-2-methylphenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrophenol	CT,MA,NH,NY,NC,RI,ME,VA
2,4-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
2,6-Dinitrotoluene	CT,MA,NH,NY,NC,RI,ME,VA
Di-n-octylphthalate	CT,MA,NH,NY,NC,RI,ME,VA
1,2-Diphenylhydrazine/Azobenzene	NC
Bis(2-Ethylhexyl)phthalate	CT,MA,NH,NY,NC,RI,ME,VA
Fluoranthene	CT,MA,NH,NY,NC,RI,ME,VA
Fluorene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorobutadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachlorocyclopentadiene	CT,MA,NH,NY,NC,RI,ME,VA
Hexachloroethane	CT,MA,NH,NY,NC,RI,ME,VA
Isophorone	CT,MA,NH,NY,NC,RI,ME,VA



#### CERTIFICATIONS

#### Certified Analyses included in this Report

Analyte	Certifications	
625.1 in Water		_
Naphthalene	CT,MA,NH,NY,NC,RI,ME,VA	
Nitrobenzene	CT,MA,NH,NY,NC,RI,ME,VA	
2-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA	
4-Nitrophenol	CT,MA,NH,NY,NC,RI,ME,VA	
N-Nitrosodimethylamine	CT,MA,NH,NY,NC,RI,ME,VA	
N-Nitrosodi-n-propylamine	CT,MA,NH,NY,NC,RI,ME,VA	
2-Methylnaphthalene	NC	
Phenanthrene	CT,MA,NH,NY,NC,RI,ME,VA	
2-Methylphenol	NY,NC	
Phenol	CT,MA,NH,NY,NC,RI,ME,VA	
3/4-Methylphenol	NY,NC	
Pyrene	CT,MA,NH,NY,NC,RI,ME,VA	
1,2,4-Trichlorobenzene	CT,MA,NH,NY,NC,RI,ME,VA	
2,4,6-Trichlorophenol	CT,MA,NH,NY,NC,RI,ME,VA	
2-Fluorophenol	NC	
2-Fluorophenol	NC,VA	
Phenol-d6	VA	
Nitrobenzene-d5	VA	
EPA 200.7 in Water		
Iron	CT,MA,NH,NY,RI,NC,ME,VA	
Hardness	CT,MA,NH,NY,RI,VA	
EPA 200.8 in Water		
Antimony	CT,MA,NH,NY,RI,NC,ME,VA	
Arsenic	CT,MA,NH,NY,RI,NC,ME,VA	
Cadmium	CT,MA,NH,NY,RI,NC,ME,VA	
Chromium	CT,MA,NH,NY,RI,NC,ME,VA	
Copper	CT,MA,NH,NY,RI,NC,ME,VA	
Lead	CT,MA,NH,NY,RI,NC,ME,VA	
Nickel	CT,MA,NH,NY,RI,NC,ME,VA	
Selenium	CT,MA,NH,NY,RI,NC,ME,VA	
Silver	CT,MA,NH,NY,RI,NC,ME,VA	
Zinc	CT,MA,NH,NY,RI,NC,ME,VA	
EPA 245.1 in Water		
Mercury	CT,MA,NH,RI,NY,NC,ME,VA	
EPA 300.0 in Water		
Chloride	NC,NY,MA,VA,ME,NH,CT,RI	
EPA 350.1 in Water		
Ammonia as N	NC,NY,MA,NH,RI,ME,VA	
SM21-22 2540D in Water	a 10-ye 1 ayetii ayi 1114paayetiing 161	
	CT.VA. VIV.VIV.VIC.VE.VA	
Total Suspended Solids	CT,MA,NH,NY,RI,NC,ME,VA	
SM21-22 3500 Cr B in Water		
Hexavalent Chromium	NY,CT,NH,RI,ME,VA,NC	
SM21-22 4500 CL G in Water		
Chlorine, Residual	CT,MA,RI,ME	



#### CERTIFICATIONS

#### Certified Analyses included in this Report

**Analyte** Certifications

#### SM21-22 4500 CN E in Water

Cyanide

#### CT,MA,NH,NY,RI,NC,ME,VA

 $The \ CON-TEST \ Environmental \ Laboratory \ operates \ under \ the \ following \ certifications \ and \ accreditations:$ 

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2021
RI	Rhode Island Department of Health	LAO00112	12/30/2020
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2021
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021

20FO 70 COP-KSE

Phone: 413-525-2332 Fax: 413-525-6405

CHAIN OF CUSTODY RECORD

Doc # 381 Rev 1\_03242017

http://www.contestlabs.com

39 Spruce Street East Longmeadow, MA 01028

Page\_1\_\_of\_\_1\_

**Table of Contents** Disselvete Martile Somples Matrix Codes:

GW = Ground Water

WW = Waste Water

DW = Drinking Water <sup>2</sup> Preservation Codes: ( = Sodium Hydroxide S = Sulfuric Acid B = Sodium Bisulfate s = Summa Canister Container Codes: 0 = Other (please 0 = Other (please 0 = Other (please Non Soxhlet A = Amber Glass G = Glass PCB ONLY Soxhlet Preservation Code O Field Filtered O Field Filtered N = Nitric Acid = Tedlar Bag O Lab to Filter O Lab to Filter M = Methanol <sup>3</sup> Container Code ST = Sterile A = Air S = Soil SL = Sludge SOL = Solid P = Plastic = Sodium **Thiosulfate** # of Containers / = Vial define) 모두 define) define) Please use the following codes to indicate possible sample concentration within the Conc IV muimond2 × × × Hardness 803 × ELAC and Alfla-LAP, LLC Accredited H - High; M - Medium; L - Low; C - Clean; U - Unknown Chromatogram SSI AIHA-LAP,LLC www.contestlabs.com ⋖ × Hdl bCB,2 ANALYSIS REQUESTED Code column above: Other I × \$,00/ Syanide Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn) WRTA Total Metals (Sb, As, Cd, Cr III, ۵ TRC MA MCP Required MCP Certification Form Required CT RCP Required RCP Certification Form Required Chloride MWRA School MA State DW Required MBTA Special Requirements ğğ  $\Rightarrow$ jennings@lrt-IIc.net Kgravelle@Irt-Ilc.net Matrix Code <u>≷</u> გ Municipality Brownfield 5-day PWSID # 10-Day Delivery Grab 3-Day 4-Day EXCEL CLP Like Data Pkg Required; × Composite PDF < Government 4530 Due Date: Email To: Date/Time 3 Ending Format: Federal Other: 7-Day -Day 2-Day Ċţ Project Entity Beginning Date/Time 28.5 (V 石で Samples are for NPDES RGP Parameters. Lockwood Remediation Technologies Email: info@contestlabs.com 11-12-11-15 Date/Time: Client Sample ID / Description Date/Time: W/1/20 Address: 89 Crawford Street, Leominster, MA 01453 Date/Time: Date/Time: Date/Time: Receiving Water rolled the allower million Project Manager: Kim Gravelle Con-Test Quote Name/Number wished by: (signature) Relinquished)by: (signature) Comments: pH MW 6.7 Phone: (774) 450-7177 Project Number: 2-2048 (signature) (ecerated by: (signature) ved by: (signature) Con-Test Work Order# Invoice Recipient: Project Location: Sampled By: Page 49 of 50

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples\_\_\_\_\_



Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Receive	A D.,								
	шБу			Date	4/15	***************************************	Time	-1422.SF	+1705
How were the	•	In Cooler	T	No Cooler		On Ice	7	No Ice	
receive	ed?	Direct from Sam	pling			Ambient		Melted Ice	
Were sampl	oe within		By Gun #	2_	Þ	Actual Tem	p - 2.2	-	
Temperature		т	By Blank #			، Actual Temı			
=	Custody Se	eal Intact?		Were S		Tampered		NA	
	COC Relin			•		e With San			
		eaking/loose caps	on anv sam		-E	o wan our	iipics:		
Is COC in ink			, , , , , , , , , , , , , , , , , , ,	Were sample	s receive	ed within ho	oldina time?	Т	
Did COC inc		Client	<b>.</b>	Analysis	Т		er Name		
pertinent Info	rmation?	Project	T	ID's	T		Dates/Times	T	
Are Sample I	abels filled	out and legible?	Т	<del></del>				<del></del>	
Are there Lab	to Filters?	•	Ŧ	· W	√ho was	notified?			
Are there Rus	hes?		£	. W	/ho was	notified?			
Are there Sho	rt Holds?		T	W	/ho was	notified?	Katie		
Is there enoug	gh Volume	?	-T	•		-	<u> </u>		
Is there Head	space whe	re applicable?	- F	15 MS/	/MSD?	Ŧ	and a		
Proper Media/	/Container:	s Used?		ls s	plitting sa	amples requ		F	
Were trip blan	ks receive	ed?	F		COC?				
Do all sample	s have the	proper pH?		Acid -	T		Base		
20 an sample		, , ,		*****				<del></del>	
Vials		Containers:	#			# 1			#
<b>Vials</b> Unp-		Containers: 1 Liter Amb.	# /	1 Liter Plas	stic	# 1		Amb.	#
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Vials Unp- HCL- Meoh-	#	1 Liter Amb. 500 mL Amb. 250 mL Amb.		500 mL Pla 250 mL Pla	stic stic	#	16 oz 8oz Am	<del></del>	***************************************
Vials Unp- HCL- Meoh- Bisulfate-	#	1 Liter Amb. 500 mL Amb. 250 mL Amb. Flashpoint		500 mL Plas 250 mL Plas Col./Bacter	stic stic ria	ı	16 oz 8oz Am 4oz Am 2oz Am	nb/Clear nb/Clear nb/Clear	#
Vials Unp- HCL- Meoh- Bisulfate- DI-	#	1 Liter Amb. 500 mL Amb. 250 mL Amb. Flashpoint Other Glass		500 mL Plas 250 mL Plas Col./Bacter Other Plas	stic stic ria		16 oz 8oz Am 4oz Am 2oz Am End	nb/Clear nb/Clear	#
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Vials Unp- HCL- Meoh- Bisulfate- DI- Thiosulfate- Sulfuric-  Vials Unp- HCL-	4	1 Liter Amb. 500 mL Amb. 250 mL Amb. Flashpoint Other Glass SOC Kit Perchlorate  Containers: 1 Liter Amb. 500 mL Amb.	Y	500 mL Pla: 250 mL Pla: Col./Bacter Other Plas Plastic Ba Ziplock Unused Medi	stic stic ria tic ig ia		16 oz 8oz Am 4oz Am 2oz Am End Frozen:	hb/Clear hb/Clear hb/Clear core	
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Vials Unp- HCL- Meoh- Bisulfate- DI- Thiosulfate- Sulfuric-  Vials Unp- HCL-	4	1 Liter Amb. 500 mL Amb. 250 mL Amb. Flashpoint Other Glass SOC Kit Perchlorate  Containers: 1 Liter Amb. 500 mL Amb. 250 mL Amb. Col./Bacteria	Y	500 mL Plate 250 mL Plate Col./Bacter Other Plas Plastic Ba Ziplock  Unused Medi  1 Liter Plas 500 mL Plate 250 mL Plate Flashpoin	stic stic ria tic ng ia stic stic stic stic stic stic stic stic	4	16 oz 8oz Am 4oz Am 2oz Am Enc Frozen: 16 oz 8oz Am 4oz Am 2oz Am	Amb. ab/Clear ab/Clear ab/Clear core	

 From:
 Kerry McGee

 To:
 Jake Jennings

 Cc:
 Kim Gravelle

Subject: Re: Work Order 20F0701

**Date:** Monday, June 22, 2020 5:26:59 PM

Hi Jake, I checked with the lab to see if they could run the VOCs at lower than a 40x dilution but they said they would not want to run it any lower because there are such large hits of target compounds it might lead to instrument contamination.

Thanks, Kerry

Kerry McGee Project Manager Con-Test Analytical Laboratory (413) 525-2332 Ext. 18 Kerry.McGee@contestlabs.com

On Mon, Jun 22, 2020 at 2:55 PM Jake Jennings < JJennings@lrt-llc.net > wrote:

Hi Kerry,

I was just looking through the data for the above referenced work order and many of the Detection Limits are too high for NPDES RGP Parameters. The following are what I've found so far that are over.

1,4 Dichlorobenzene, 1,2 Dichloroethane, 1,1 Dichloroethylene, Methylene Chloride, 1,1,2 Trichloroethane, Trichloroethylene, Tetrachloroethylene, Vinyl Chloride.

Can you please review the work order and rerun / apply the proper DLs for any analysis that is over the corresponding limitation. I've attached the RGP Effluent limitations for your reference.

Thank you,

Jake

#### Lockwood Remediation Technologies, LLC

89 Crawford Street

Leominster, MA 01453



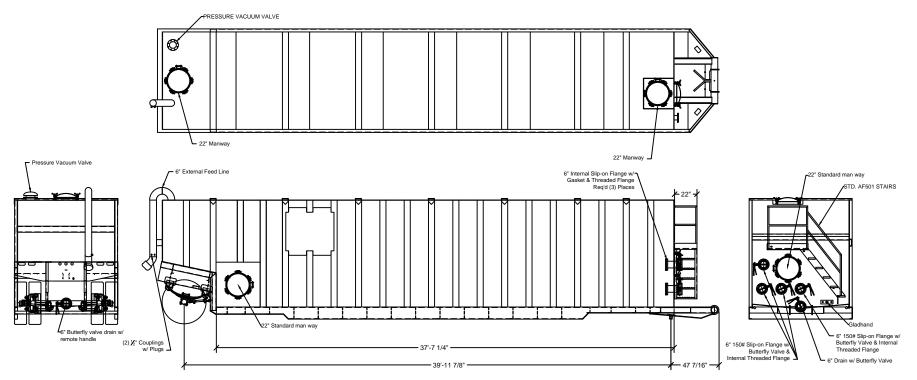
O: 774.450.7177

F: 888.835.0617

M: 978.751.5431

jjennings@lrt-llc.net





#### STANDARD SPECIFICATION

CAPACITY: .... 21,000 GALLONS (500 BBL)

SIDE SHEETS: .... 1/4" A36 PLATE TOP SHEET: .... 1/4" A36 PLATE FRONT SHEET: .... 1/4" A36 PLATE REAR SHEET: .... 1/4" A36 PLATE

FLOOR: .... 1/4" A36 PLATE

MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL

FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE

SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE SUSPENSION: .... 3 LEAF SPRING, 22,500 LBS. CACPACITY

AXLE: .... 77.5" TRACK, 22,500 LBS. CAPACITY

TIRES: .... 11R22.5

WHEELS: .... 8.25 x 22.5 STEEL

MANWAYS: .... 3 - 22" DIA. FRONT & TOP 1 - 22" DIA. CURB SIDE

VALVES: .... 1 - BLAYLOCK PRESSURE VALVE

5 - 6" BUTTERFLY (FRONT)

1 - 6" BUTTERFLY VALVE (REAR DRAIN)

INLET PIPING: .... 1 - 6" PIPE SYSTEM (REAR)

BLAST: .... (INTERIOR) SSPC-SP-10 (NEAR WHITE)

(EXTERIOR) SSPC-SP-6 (COMMERCIAL BLAST)

PAINT: .... (INTERIOR) EPOXYPHENOLIC 100% SOLID 20.0 MILS D.F.T.

(EXTERIOR) PRIMER COAT EPOXY 3.0 TO 4.0 MILS D.F.T. (EXTERIOR) FINISH COAT POLURETHANE 3.0 TO 4.0 D.F.T.

#### 21,000 Gal. Frac Tank



Lockwood Remediation Technologies, LLC

89 Crawford Street Leominster, Massachusetts 01453 O: 774-450-7177 F: 888-835-0617



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 autoreset.
- 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	STATE OF THE PARTY OF		38" I.D. X .5	경상	



**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 GFPPL

Fittings Materials Available: GF

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=Polywinyl Chloride, PE=Polyethylene, PVDF=Polywinylidene 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



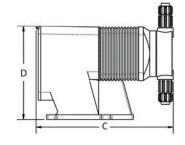
#### Pre-Engineered Systems

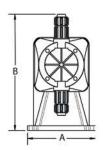
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key 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.	Α	В	С	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

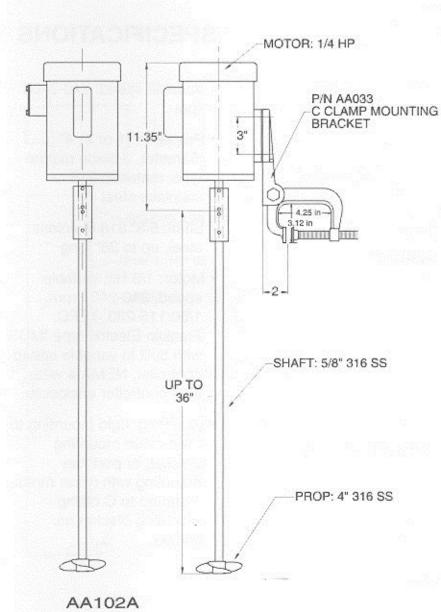






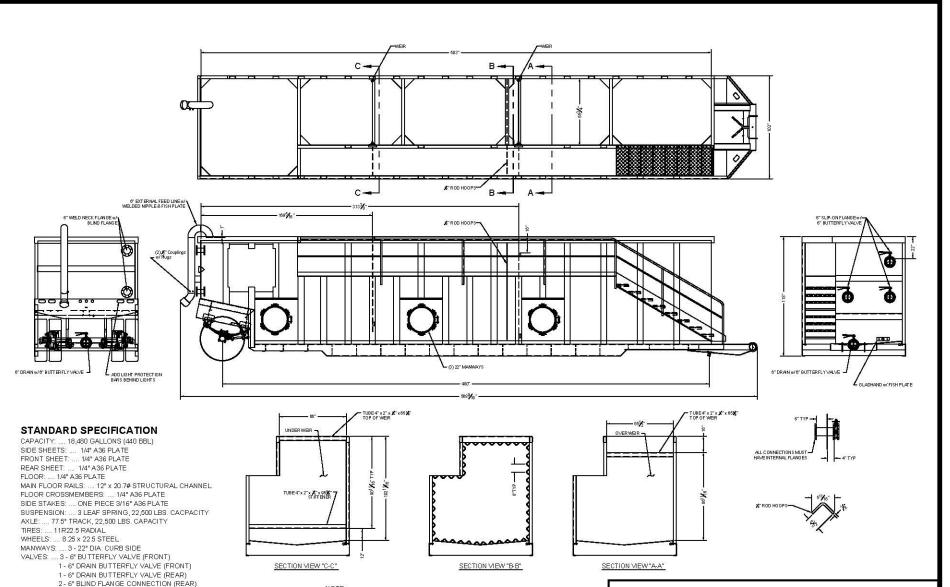


### **MIXER MODEL NO. AA102A**



### **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.



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

INLET PIPING: .... 1 - 6" PIPE SYSTEM (REAR)

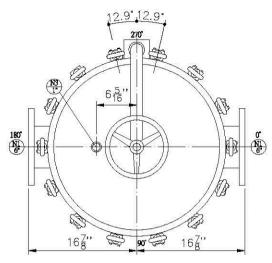
### 18,000 gal. Weir Tank



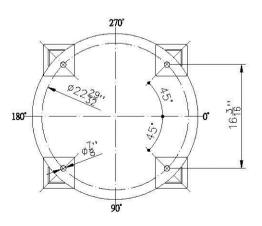
#### Lockwood Remediation Technologies, LLC

89 Crawford Street Leominster, Massachusetts 01453 O: 774-450-7177 F: 888-835-0617

## 567 (1) 99112 13 (8) 0.D.ø26" 615° $36\frac{7}{32}$ " 2 INLET OUTLET \(\frac{\hat{N}^2}{6}\) (N) (15) N4 18 DRAIN NPT. 67" SIDE VIEW



TOP VIEW



**ANCHOR** 

# BILL OF MATERIALS (QUANTITY PER UNIT)

CUSTOMER         DESIGN         150         PSIG         90         'C           DESTINATION         MAX.         A.W.P.         150         PSIG         90         'C           CUST.         P.O.         HYDROSTATIC TESTED         225         PSIG         CODE         CODE         CODE         CODE         CODE         CODE         CODE         N.B.         N.B. <th>PROD</th> <th>ORDERS.O W</th> <th>IFG. SERI</th> <th>AL NO.</th> <th></th> <th></th>	PROD	ORDERS.O W	IFG. SERI	AL NO.				
DESTINATION         MAX. A.W.P. 150         PSIG 90 ℃           CUST. P.O.         HYDROSTATIC TESTED 225         PSIG           CUST.EQUIP         CODE         CODE           CODE STAMP         N.B.           NO OF UNITS         SCH SHIP DATE           WEIGHT EMPTY         KG. FULL         KG           NO.         DESCRIPTION         MATERIAL UNIT QUAN. PART NO.           1 FILTER COVER         304         1           2 FILTER SHELL         304         1           3 GASKET         EPDM         1           4 LEG WELDMENT         304         4           5 DAVIT HANDWHEEL         304         1           6 DAVIT SCREW         304         1           7 DAVIT ARM         304         1           8 SEPARATE PLATE         304         1           9 EYENUT         304         14           10 WASHER         304         14           12 BOLT SUPPORT         304         14           13 BASKET         304         6           14 BAG-LOCK DEVICE         304         6           15 INLET 6" ANSI 150B RF         304         1           16 OUTLET 6" ANSI 150B RF         304         1	CUSTO	OMERD	ESIGN	150	_ PSIG	90 .C		
CUST.EQUIP CODE N.B								
CUST.EQUIP CODE N.B								
CODE STAMP								
NO OF UNITS         SCH SHIP DATE           WEIGHT EMPTY         KG. FULL         KG           NO.         DESCRIPTION         MATERIAL         UNIT         QUAN.         PART NO.           1         FILTER COVER         304         1         1           2         FILTER SHELL         304         1         1           3         GASKET         EPDM         1         1           4         LEG WELDMENT         304         4         1           5         DAVIT HANDWHEEL         304         1         1           6         DAVIT SCREW         304         1         1           7         DAVIT ARM         304         1         1           8         SEPARATE PLATE         304         1         1           9         EYENUT         304         14         1           10         WASHER         304         14         1           12         BOLT SUPPORT         304         14           13         BASKET         304         6           14         BAG-LOCK DEVICE         304         6           15         INLET 6" ANSI 150B RF         304         1	00011							
WEIGHT EMPTY         KG. FULL         KG           NO.         DESCRIPTION         MATERIAL         UNIT         QUAN.         PART NO.           1         FILTER COVER         304         1         1           2         FILTER SHELL         304         1         1           3         GASKET         EPDM         1         1           4         LEG WELDMENT         304         4         4           5         DAVIT HANDWHEEL         304         1         1           6         DAVIT SCREW         304         1         1           7         DAVIT ARM         304         1         1           8         SEPARATE PLATE         304         1         1           9         EYENUT         304         14         1           10         WASHER         304         14         1           11         EYEBOLT         304         14         1           12         BOLT SUPPORT         304         6         1           13         BASKET         304         6         1           14         BAG—LOCK DEVICE         304         6           15 <td< td=""><td>NO O</td><td></td><td></td><td></td><td></td><td>I.D</td></td<>	NO O					I.D		
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14     BAC-LOCK DEVICE     304     6       15     INLET 6" ANSI 150B RF     304     1       16     OUTLET 6" ANSI 150B RF     304     1       17     VENT NPT 1"     304     1	12	BOLT SUPPORT	304		14			
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18 DRAIN NPT 1" 304 1	17	VENT NPT 1"	304		1			
	18	DRAIN NPT 1"	304		1			



Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA

NAME	REV: A	
Multi-Bag Filter Ve	ssel	SCALE: NONE
PROJECT NO.	ORDER NO.	ITEM NO.
DATE:	LINIT	



# Polyester Liquid Filter Bag



#### **Features**

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

### Applications

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

#### Sizes

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

### Micron Ratings

Available fibers range from 1 to 1500 microns

### **Options**

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

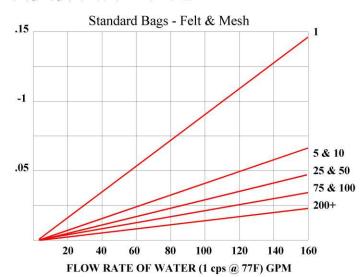
### **Optional Filter Media**

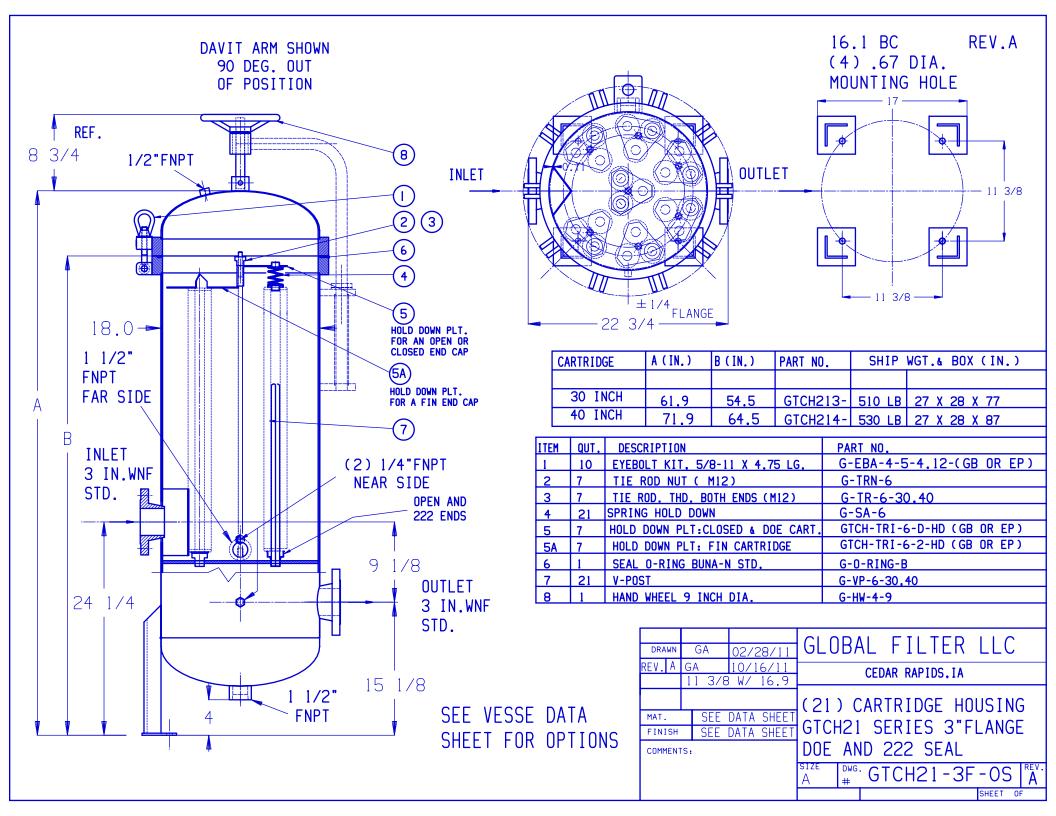
Felt: Nomex, Polyester, Polypropylene

Monofilament: Nylon, Polyester, Polypropylene

Multifilament: Nylon, Polyester

Polypropylene: Oil Removal





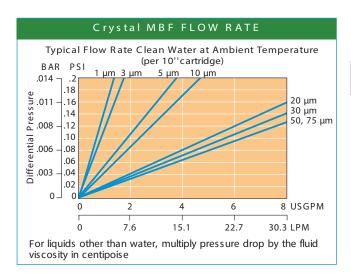


# **Crystal MBF Series Filter Cartridges**

### **Ordering Information**

	Crystal MBF Nomenclature Information						
CMBF	10	-20	N	N	-BB		
1 3	icrons) 20 30 50 75	Nominal Length (inches)  -4  -5  -9.75  -10  -19.5  -20  -29.25  -30  -39  -40  -50	End Configuration P Double Open End P2 226/Flat Single Open End P3 222/Flat Single Open End P6 Self-Seal Spring on One End P7 226/Fin Single Open End P8 222/Fin Single Open End PX Extended Core N None (Cut Ends) DBG Direct Bond Santoprene Gaskets	Gasket o S Silico B Buna E EPD V Vitor T Teflo N None	one a-N M n ings only) on endcap. Viton (O-R		

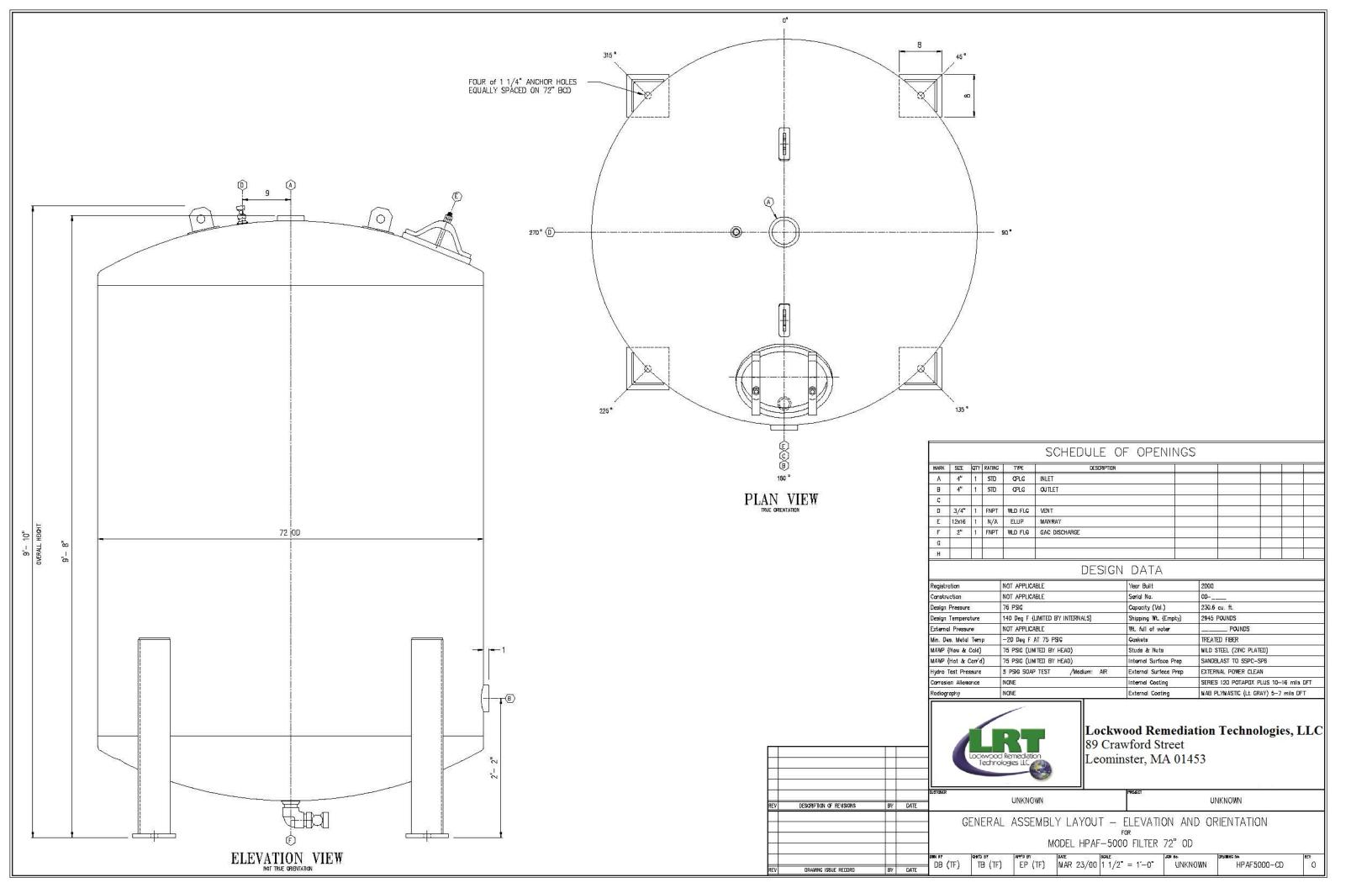
Example: CMBF 10-20NN-BB





Certified to NSF/ANSI Standard 61 for materials requirements only.

COMPONENT





89 Crawford Street

Leominster, Massachusetts 01453

Tel: 774.450.7177 Fax: 888.835.0617 www.lrt-llc.net

# FILTRATION MEDIA: 8x30 RE-ACTIVATED CARBON 4x10 RE-ACTIVATED CARBON

#### **GENERAL DESCRIPTION**

Select Re-Activated carbon from domestic sources is quality screened during our purchasing process for activity, density and fines. The use of re-activated carbon is recommended as a lower cost alternative for most sites where drinking water quality is not necessary. In many cases our re-activated carbon meets and exceeds imported virgin carbon. In addition all carbon either sold by itself or installed in our filtration units traced by lot number to the installation or sale.

8x30 (Liquid Phase) Standard Specifications:	Standard	Value
lodine Number	ASTM D-4607	800 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	8x30 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75

4*10 (Vapor Phase) Standard Specifications:	Standard	Value
Carbon Tetrachloride Activity Level	ASTM D-3467	40 Minimum
Moisture Content	ASTM D-2867	5% Maximum (as packed)
Particle Size	ASTM D-2862	4x10 US Mesh
Ash		10% Maximum
Total Surface Area (N2BET)		1050 Minimum
Pore Volume (cc/g)		0.75



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



## **FEATURES & BENEFITS**

#### RESIDENTIAL SOFTENING APPLICATIONS

Resin parameters are optimized for residential softeners

#### LOW COLOR THROW

#### SUPERIOR PHYSICAL STABILITY

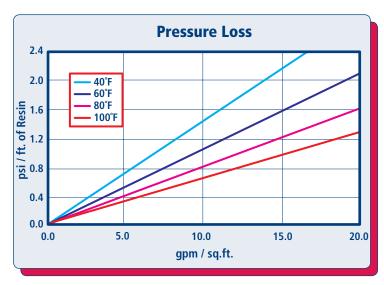
93% plus sphericity and high crush strengths together with carefully controlled particle distribution provides long life and low pressure drop

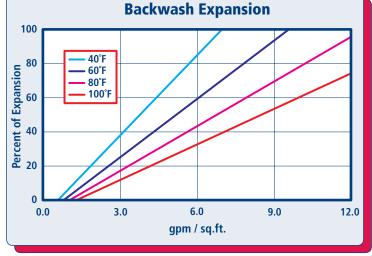
#### COMPLIES WITH US FDA REGULATIONS

Conforms to paragraph 21CFR173.25 of the Food Additives Regulations of the US FDA

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

# **HYDRAULIC PROPERTIES**





#### **PRESSURE LOSS**

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

#### **BACKWASH**

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

# RESINTECH® CGS

#### **PHYSICAL PROPERTIES**

Polymer Structure Styrene/DVB

Polymer Type Gel

Functional Group Sulfonic Acid Physical Form Spherical beads

Ionic Form as shipped Sodium

**Total Capacity** 

Sodium form >1.8 meq/mL

**Water Retention** 

Sodium form 40 to 52 percent

Approximate Shipping Weight

Sodium form 50 lbs./cu.ft.

Screen Size Distribution (U.S. mesh) 16 to 50

Maximum Fines Content (<50 mesh) 1 percent

Minimum Sphericity 90 percent

Uniformity Coefficient 1.6 approx.

Resin Color Amber

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

# SUGGESTED OPERATING CONDITIONS

Maximum continuous temperature

Sodium form 250°F

Minimum bed depth 24 inches

Backwash expansion 25 to 50 percent

Maximum pressure loss 25 psi
Operating pH range 0 to 14 SU

**Regenerant Concentration** 

Salt cycle 10 to 15 percent NaCl Regenerant level 4 to 15 lbs./cu.ft. Regenerant flow rate. 0.5 to 1.5 gpm/cu.ft.

Regenerant contact time >20 minutes

Displacement flow rate

Displacement volume

10 to 15 gallons/cu.ft.

Rinse flow rate

Same as service flow

Rinse volume

35 to 60 gallons/cu.ft.

Service flow rate

1 to 10 gpm/cu.ft.

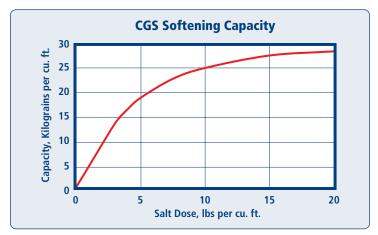
Note: These guidelines describe average low risk operating conditions. They are not intended to be absolute minimums or maximums.

For operation outside these guidelines, contact ResinTech Technical Support

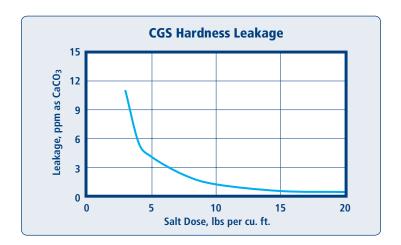
#### **APPLICATIONS**

#### **SOFTENING**

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



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





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

**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.

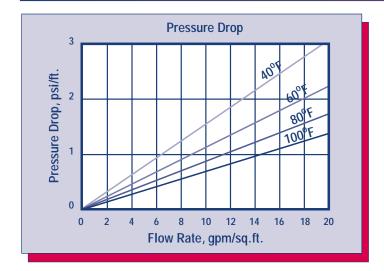
#### SUPERIOR PHYSICAL STABILITY

#### LOWER TOC LEACH RATE

Makes it ideal for polishing mixed beds in wafer washing and other high purity water polishing applications.

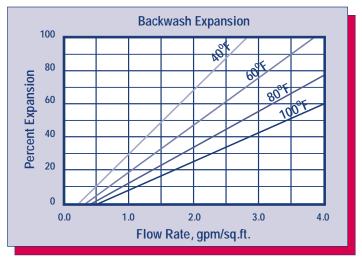
\*For potable water applications, the resin must be properly pre-treated, usually by multiple exhaustion and regeneration cycles, to ensure compliance with extractable levels.

# HYDRAULIC PROPERTIES





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  $R-N-(CH_3)_3+CT$  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 to 14

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

CI Form 44 lbs/cu.ft.

OH Form 41 lbs/cu.ft.

Swelling CI- to OH- 18 to 25 percent

**Total Capacity** 

CI 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	Cap	Capacity Kilograms per cubic foot						
NaOH/ft <sup>3</sup>	HCI	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SiO <sub>3</sub>	$H_2CO_3$				
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°DF 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.

# GROOVED & SMOOTH-END FLOWMETER MODEL MG/MS100 SPECIFICATIONS

#### **PERFORMANCE**

ACCURACY/REPEATABILITY: ±2% of reading

guaranteed throughout full range. ±1% over reduced

range. Repeatability 0.25% or better. RANGE: (see dimensions chart below)
HEAD LOSS: (see dimensions chart below)

**MAXIMUM TEMPERATURE**: (Standard Construction)

160°F constant

PRESSURE RATING: 150 psi

#### **MATERIALS**

TUBE: Epoxy-coated carbon steel.

BEARING ASSEMBLY: Impeller shaft is 316 stainless steel.
Ball bearings are 440C stainless steel.

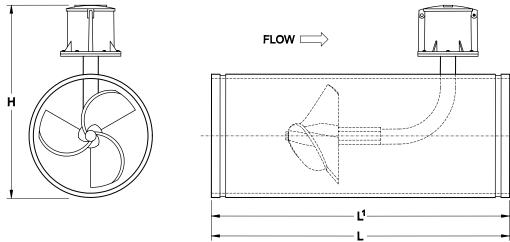
MAGNETS: (Permanent type) Cast or sintered alnico BEARING HOUSING: Brass; Stainless Steel optional IMPELLER: Impellers are manufactured of high-impact plastic, retaining their shape and accuracy over the life of the meter. High temperature impeller is optional.

**REGISTER**: An instantaneous flowrate indicator and six-digit straight-reading totalizer are standard. The register is hermetically sealed within a die cast aluminum case. This protective housing includes a domed acrylic lens and hinged lens cover with locking hasn

**COATING:** Fusion-bonded epoxy

#### **OPTIONS**

- Forward/reverse flow measurement
- High temperature construction
- "Over Run" bearing assembly for higher-than-normal flowrates
- Electronic Propeller Meter available in all sizes of this model
- A complete line of flow recording/control instrumentation
- Straightening vanes and register extensions available
- Certified calibration test results



			1
McCrometer reserves the	right to change	design or specificati	ons without notice

MG100 / MS100							DIMEN	SIONS					
Meter Size (inches)	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24
Maximum Flow U.S. GPM	250	250	250	600	1200	1500	1800	2500	3000	4000	5000	6000	8500
Minimum Flow U.S. GPM	40	40	40	50	90	100	125	150	250	275	400	475	700
Head Loss in Inches at Max. Flow	29.50	29.50	29.50	23.00	17.00	6.75	3.75	2.75	2.00	1.75	1.50	1.25	1.00
Shipping Weight, lbs.			17	40	54	68	87	106	140	144	172	181	223
H (inches) * See		10.9	12.78	13.84	14.84	16.91	18.90	20.53	22.53	25.53	26.53	30.53	
L (inches) MG100 Special		13	20	20	20	20	20	20	22	22	22	22	
L <sup>1</sup> (inches) MS100 Note		13	20	22	22	22	22	22	24	24	24	24	
O.D. of Meter Tube			3.50	4.500	6.625	8.625	10.750	12.750	14.00	16.00	18.00	20.00	24.00

\*Special Note—Reducing fittings incorporating grooves are supplied to adapt the 3-inch model to smaller line sizes.

Larger flowmeters on special order.





Revision date 2019-15-4

# SAFETY DATA SHEET

Revision number 1

#### SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID: Redux-823

Product Name: Processing aid for industrial applications

Revision Date: Apr 15, 2019 Supersedes Date: Jan 25, 2018

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 of the substance or mixture

Not a hazardous substance or mixture according to United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).

#### **Hazards Not Otherwise Classified (HNOC)**

None.

#### **SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS**

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 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 Proper	Physical and Chemical Properties				
Density	6.26 lb/gal				
Specific Gravity	0.6 - 0.9				
Appearance	granular, white solid				
рН	5 - 9 @ 5 g/L				
Odor Threshold	N/A				
Odor Description	N/A				
Water Solubility	Complete				
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	Will not burn				

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#### **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

No Data Available

#### **Acute Toxicity**

Inhalation, Testing: Not expected to be toxic by inhalation.

Ingestion, Testing: LD50, Rat > 5,00 mg/kg Dermal, Testing: LD50, Rat > 5,000 mg/kg

#### Respiratory/Skin Sensitization

No Data Available

#### Serious Eye Damage/Irritation

No Data Available

#### Skin Corrosion/Irritation

No Data Available

#### **Specific Target Organ Toxicity - Repeated Exposure**

No Data Available

# **Specific Target Organ Toxicity - Single Exposure**

No Data Available

# **SECTION 12) ECOLOGICAL INFORMATION**

#### **Acute Ecotoxicity**

Danio Rerio: 96 hr LC50 >100 mg/l (OECD 203)

Fathead Minnow (pimephales promelas): 96hr LC50 >100 mg/l (OECD 203)

Daphnia Magna: 48hr EC50 >100 mg/l (OECD 202)

Scenedesmus Subspicatus: 72hr IC50 >100 mg/l (OECD 201)

#### **Mobility in Soil**

No data available.

# **Bio-accumulative Potential**

Not bioaccumulating.

#### Persistence and Degradability

Not readily biodegradable.

#### 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**

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.

#### Additional Information

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

# Version 1.0:

Revision Date: Jan 25, 2018 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.

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Revision date 2019-15-4

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).

#### **Eve 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.

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#### **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)

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.

Redux E50 Page 5 of 6

# **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

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Redux E50 Page 6 of 6



# MassDEP - Bureau of Waste Site Cleanup

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

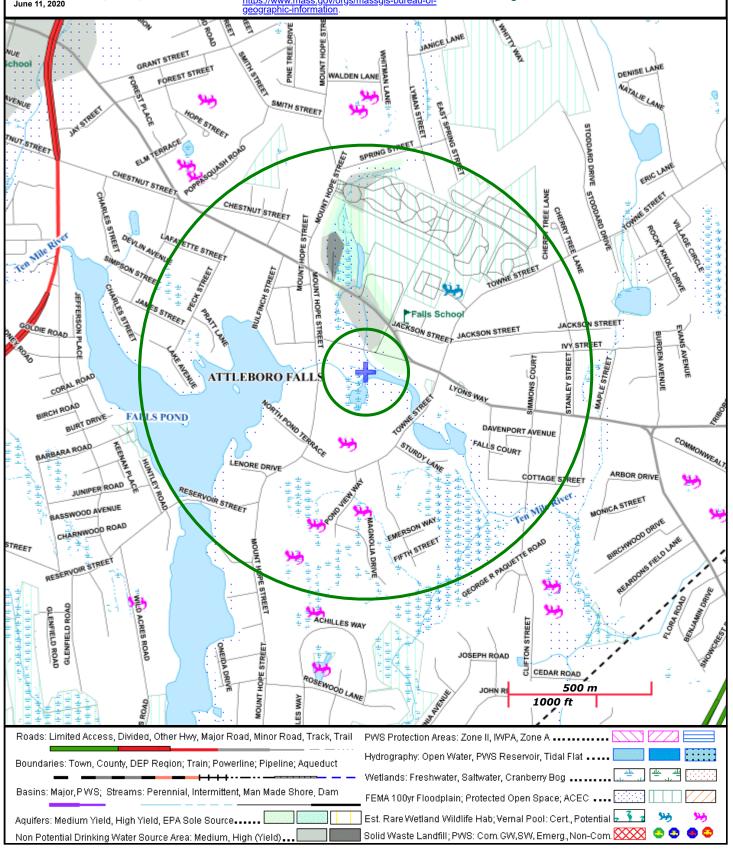
Site Information: LIBERTY UTILITIES NORTH ATTLEBOROUGH, MA

NAD83 UTM Meters: 4649117mN , 308079mE (Zone: 19) June 11, 2020

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found as be found at:

https://www.mass.gov/orgs/massgis-bureau-of-







# Documentation of the Results of the ESA Eligibility Determination:

Using information in Appendix II of the NPDES RGP, the project located at 61 Commonwealth Ave North Attleborough, MA is eligible for coverage under this general permit under FWS Criterion C. This project is located in Bristol County. No designated critical habitats were listed in the project area. An Endangered Species Consultation was conducted on the U.S. Fish & Wildlife Service New England Field Office ECOS IPaC webpage for the Site:

• The Northern long-eared bat was listed as "Threatened" wherever it is found;

Temporary dewatering activities at the site are not expected to impact the Northern Long-eared Bat.

Northern long-eared bats spend winter hibernating in caves and mines. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). There are no caves and mines located at the site. There are trees in the immediate vicinity of the site; however, tree removal is not part of the scope of work related to this Notice of Intent. Therefore, temporary dewatering activities will have "no impact" to the Northern Long-eared Bat.



# 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



June 11, 2020

In Reply Refer To:

Consultation Code: 05E1NE00-2020-SLI-2902

Event Code: 05E1NE00-2020-E-08809

Project Name: Liberty Utilities

Subject: List of threatened and endangered species that may occur in your proposed project

location, and/or may be affected by your proposed project

# To Whom It May Concern:

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

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

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

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

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

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

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

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

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

#### Attachment(s):

Official Species List

# **Official Species List**

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

This species list is provided by:

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

# **Project Summary**

Consultation Code: 05E1NE00-2020-SLI-2902

Event Code: 05E1NE00-2020-E-08809

Project Name: Liberty Utilities

Project Type: Water Withdrawal / Depletion

Project Description: Construction Dewatering

# **Project Location:**

Approximate location of the project can be viewed in Google Maps: <a href="https://www.google.com/maps/place/41.97078416000005N71.31632365891556W">https://www.google.com/maps/place/41.97078416000005N71.31632365891556W</a>



Counties: Bristol, MA

# **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<sup>1</sup>, 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. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

# **Mammals**

NAME

Northern Long-eared Bat Myotis septentrionalis

Threatened

No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>

# **Critical habitats**

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



# <u>Documentation of the National Historic Preservation Act Eligibility Determination:</u>

As part of this permit, a determination was made as to whether there were any historic properties or places listed on the national register in the path of the discharge or in the vicinity of the construction of treatment systems or BMPs related to the discharge. A search on the Massachusetts Cultural Resource Information System Database and the National Register of Historic Places did not list any potential historic properties on or near the project site in the databases. Therefore, the proposed discharge will not have the potential to cause effects on historical properties.

# Massachusetts Cultural Resource Information System MACRIS

# MACRIS Search Results

Search Criteria: Town(s): North Attleborough; Street Name: Common wealth Ave; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

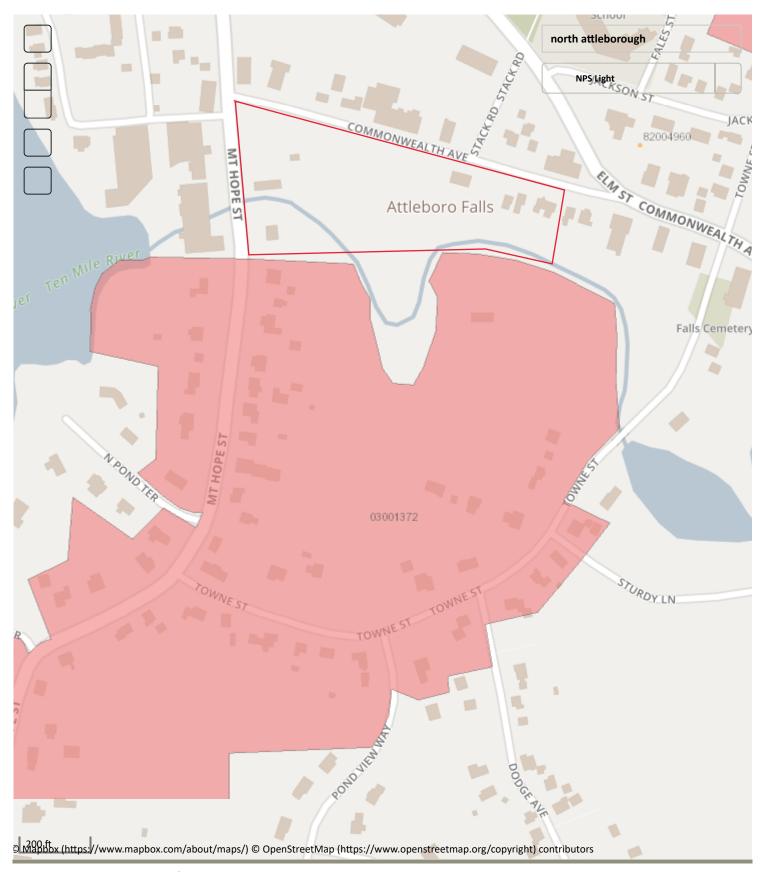
Inv. No. Property Name Street Town Year

Thursday, June 11, 2020 Page 1 of 1

# National Register of Histori...

National Park Service U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data proce...



Home (https://www.nps.gov) | Frequently Asked Questions (https://www.nps.gov/faqs.htm)