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

April 15, 2021

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)**
1500 Soldiers Field Road
Brighton, Massachusetts

Dear Sir/Madam:

On behalf of 44 SFP, LLC, 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 of groundwater that will be generated during dewatering activities associated with the construction of a new building located at 1500 Soldiers Field Road (also known as 44 Soldiers Field Place) in Brighton, Massachusetts (the Site). This work will take place on an approximately 0.7-acre lot and 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 the construction of the proposed building. To complete portions of the foundation and other miscellaneous excavations in the dry, dewatering will be required to lower the groundwater table as work is being performed. To do this, filtered sumps will be placed in low spots within the excavation. The water generated during dewatering (Source water) will be pumped to a treatment system prior to discharge to BWSC stormwater catch basin #59 with a final outfall in the Charles River. Drawings of the storm water drainage system, which depicts the path of water from the catch basin to the outfall in the Charles River, are provided in **Appendix A**. To characterize groundwater from the proposed excavation area, LRT collected a representative groundwater sample from an on-site monitoring well (B101/MW101) on March 19, 2021 (**Figure 2)**. A sample of the receiving water (The Charles river) was

also collected on March 19, 2021. 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.** Copies of the laboratory analytical data reports are provided in **Appendix B**. Concentrations of iron were detected in groundwater at concentrations above the respective NPDES RGP Effluent Limitations. Acetone, toluene, several group I polycyclic aromatic hydrocarbons (PAHs), metals and cyanide were detected, but at concentrations below respective NPDES RGP Effluent Limitations. To meet these standards, Source water will undergo treatment that includes bag filtration, carbon filtration and prior to discharge. It is assumed that metal concentrations will be treated through settling and bag filtration. 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 a treatment system with a design flow rate of up to 500 gallons per minute (gpm); the average effluent flow of the system is estimated to be 250 gpm, and the maximum flow will not exceed 500 gpm. Source water will enter two weir tanks, plumbed in parallel, at the head of the system, from the weir tanks, water will be pumped to a multi-bag filter skid (consisting of two multi-bag filter housings each containing six bag filters) and subsequently discharged to the approved discharge point. If required, contingency treatment items will include a pH adjustment system (sulfuric acid or sodium hydroxide), a chemical aided settling system comprised of LRT E50 coagulant and LRT 823 flocculant mixed inside both weir tanks, carbon treatment and ion exchange media.

Discharge from the water treatment system will pass through a flow meter/totalizer prior to discharge to a catch basin with an outfall within the Charles River. The discharge of treated water will be at one location: BWSC Catch Basin #59 to Outfall SDO150, as depicted on **Figure 2**. Effluent sampling will correspond with this discharge location.

Chemical and Additive Information

The pH adjustment system includes an automated feed system with a mix tank, chemical feed pumps and setpoint controls that maintain the pH to within discharge permit parameters. The maximum application concentration for sulfuric acid or sodium hydroxide would be 333 mg/L.

The addition of pH conditioners will 1) Not add any pollutants in concentrations which exceed permit effluent limitations; 2) Not result in the exceedance of any applicable water quality standard; and 3) Not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit. The addition of sulfuric acid or sodium hydroxide to control pH is a standard treatment for temporary construction dewatering and is not expected to exceed applicable permit limitations and water

quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water.

Based on groundwater samples collected from the site and in efforts 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 coagulant (LRT-E-50) will be injected into the influent stream prior to entering the weir tanks while the flocculant (LRT-823) will be added directly into the weir 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 25 ppm, the detected concentration in the post bag filter (carryover) has been recorded in the parts per trillion (ppt) range, (about 6 orders 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 weir tanks.

The addition of chemical aided settling system chemicals will 1) Not add any pollutant in concentrations which exceed permit effluent limitations; 2) Will not exceed any applicable water quality standard and; 3) Will not add any pollutants that would be justify the application of permit conditions that are 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 D**.

Coverage under NPDES RGP

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP. On behalf of 44 SFP, LLC we are requesting coverage under the NPDES RGP for the discharge of treated groundwater to the Charles River in support of construction dewatering activities that are to take place at the 1500 Soldiers Field Road property.

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, 44 SFP, LLC 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

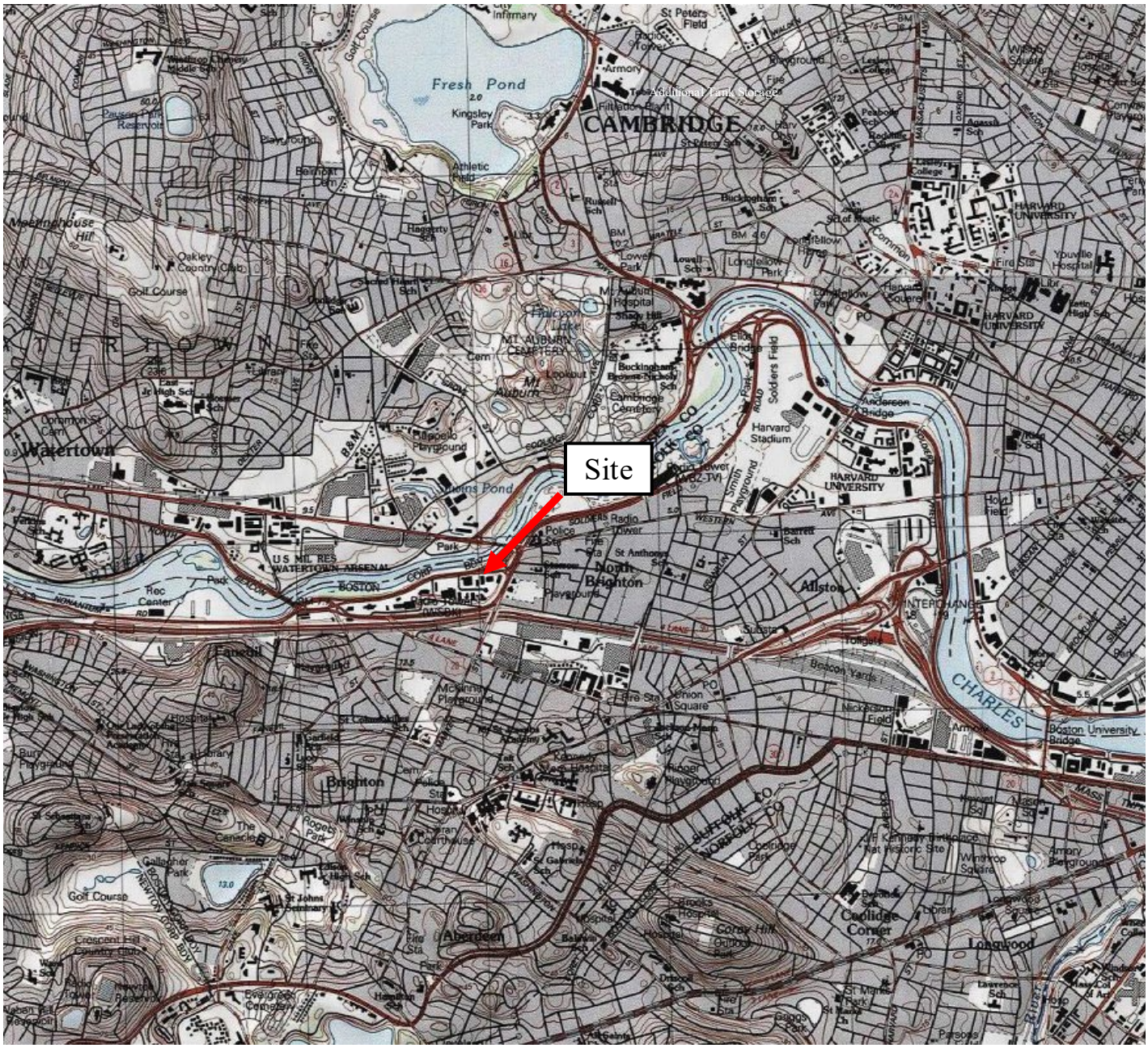
Brian Caccavale

Brian Caccavale
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 - Supplemental Information

cc: Stephen Ballas – The Ballas Group (via email)
Catherine Vakalopoulos – MassDEP (via email)

Figures



Source: ArcGIS Map Viewer

N

Notes

1. Figure is not to scale.

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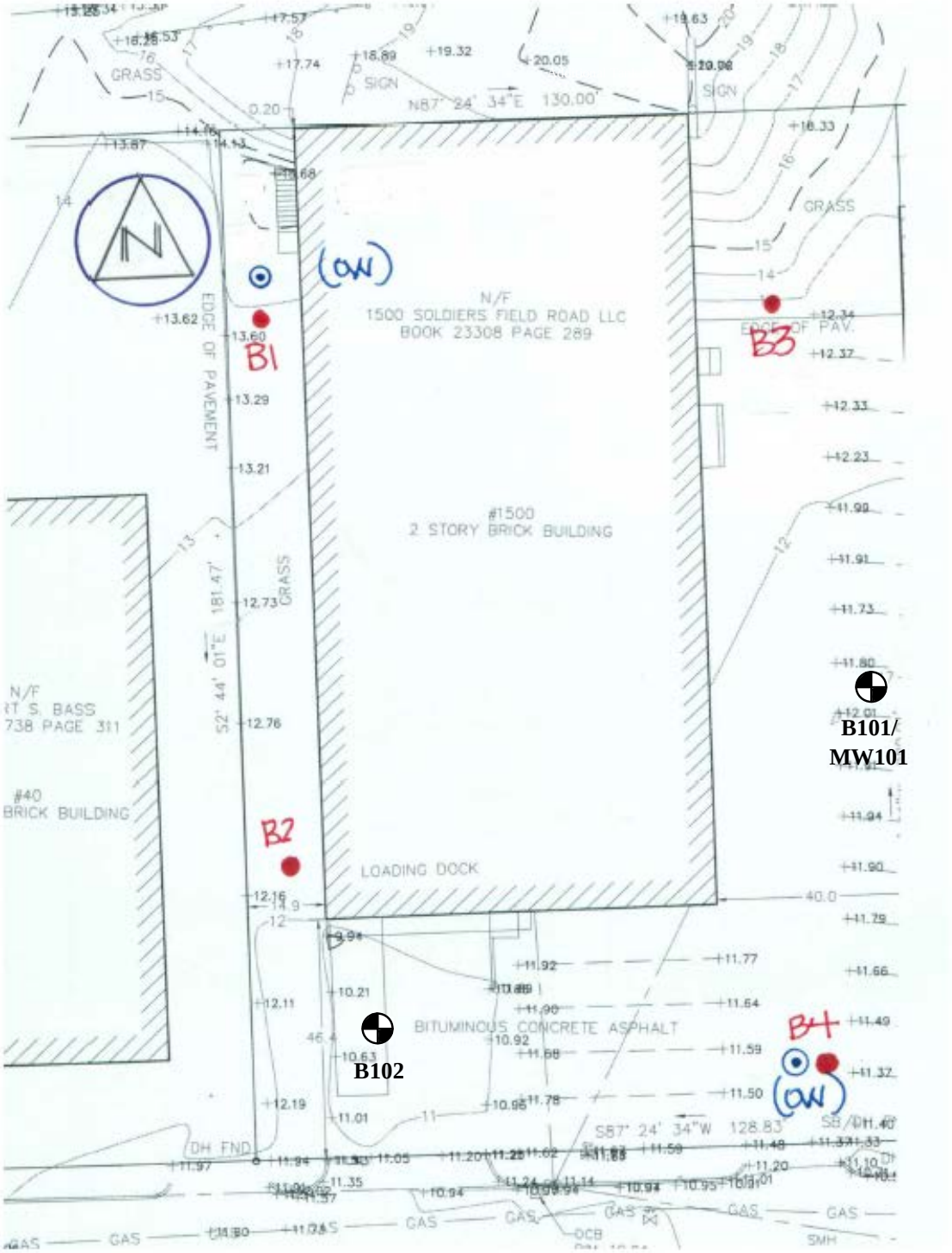
Figure 1 – Locus Plan
1500 Soldiers Field Road
Brighton, Massachusetts



Source: *Geotechnical Summary Report* prepared by KMM Geotechnical Consultants, LLC dated February 4, 2020.

Key

Previous Boring Location
Existing Monitoring Well
New Boring Location

Notes

1. Figure is not to scale.

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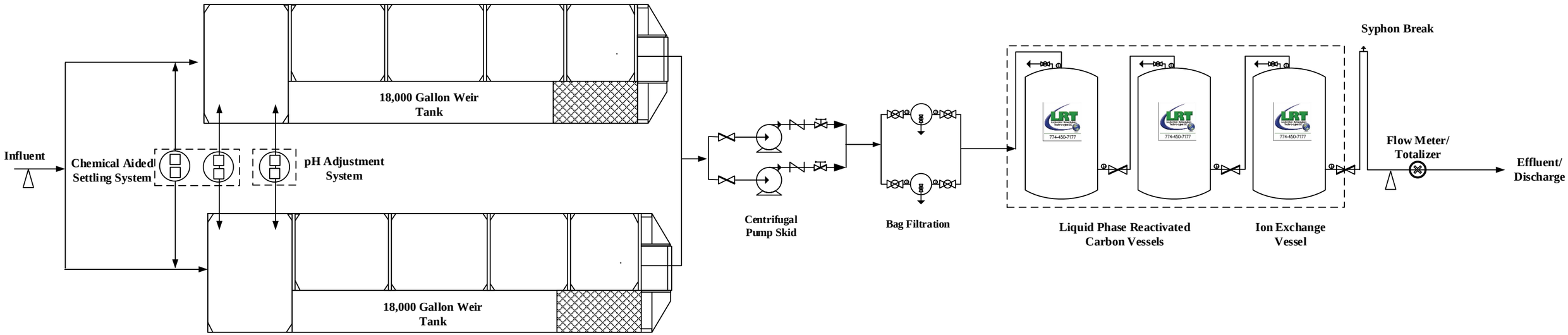
Figure 2 – Site Plan
1500 Soldiers Field Road
Brighton, Massachusetts



Notes:

1.) Figure is not to scale
2.) System rated for 500 gpm

Key:

Piping/Hose	———
Butterfly Valve	
Pressure Gauge	
Ball Valve	
Sample Port	
Check Valve	
Gate Valve	
Contingency	– – – –

Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453 Office: 774-450-7177		**Water Treatment System Schematic**	1500 Soldier Field Road Brighton, Massachusetts	PROJECT No. 2-2127	FIGURE No. 3
DESIGNED BY: LRT	**DRAWN BY:** JHJ				
CHECKED BY:	**DATE:**				

Appendix A

NOI Form

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

A. General site information:

<table>
<tr><td rowspan="4">1. Name of site:
1500 Soldiers Field Road</td><td colspan="3">Site address: 1500 Soldiers Field Road (a.k.a. 44 Soldiers Field Place)
Street:</td></tr>
<tr><td>City: Brighton</td><td>State: MA</td><td>Zip: 02135</td></tr>
<tr><td colspan="3">Contact Person: Steve Ballas</td></tr>
<tr><td colspan="3">Telephone: 617-888-3424 Email: steve@ballasgroup.com</td></tr>
<tr><td rowspan="4">2. Site owner
44 SFP, LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Mailing address: 125 Adams St. 3rd Floor
Street:</td></tr>
<tr><td>City: Newton</td><td>State: MA</td><td>Zip: 02458</td></tr>
<tr><td colspan="3">Contact Person: Same as owner</td></tr>
<tr><td colspan="3">Telephone: Email:</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Owner will act as the operator</td><td colspan="3">Mailing address:
Street:</td></tr>
<tr><td>City:</td><td>State:</td><td>Zip:</td></tr>
<tr><td colspan="2">4. NPDES permit number assigned by EPA:
NA

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="2">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):
☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:
☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Charles River	MA72-36	Class B

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

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

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

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

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	24.1
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	22.64

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No
If yes, indicate date confirmation received:

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

C. Source water information:

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

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

2. Source water contaminants: Inorganics Non Halogenated SVOCs	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ☐ Yes ■ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): SDO150	Outfall location(s): (Latitude, Longitude) 42.360803, -71.150114
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Water will enter a catch basin located on Soldiers Field Road with an outfall in the Charles River ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ■ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: BWSC discharge permit has been attached as appendix E 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): 6/1/2021 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="4">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia	✔		1	4500 NH3	0.22	<0.22	<0.22	Report mg/L	---
Chloride		✔	1	300.0	100000	1400000	1400000	Report µg/l	---
Total Residual Chlorine	✔		1	4500 CL	0.02	<0.02	<0.02	0.2 mg/L	
Total Suspended Solids		✔	1	2540D	5.0	240	240	30 mg/L	---
Antimony	✔		1	200.8	1.0	<1.0	<1.0	206 µg/L	
Arsenic		✔	1	200.8	0.8	2.3	2.3	104 µg/L	
Cadmium		✔	1	200.8	0.2	0.4	0.4	10.2 µg/L	
Chromium III		✔	1	200.8	1.0	7.9	7.9	323 µg/L	
Chromium VI	✔		1	SM21-22	4.0	<4.0	<4.0	323 µg/L	
Copper		✔	1	200.8	1.0	18	18	242 µg/L	
Iron		✔	1	200.7	50	5700	5700	5,000 µg/L	
Lead		✔	1	200.8	0.5	16	16	160 µg/L	14.22
Mercury	✔		1	245.1	0.1	<0.1	<0.1	0.739 µg/L	
Nickel		✔	1	200.8	5.0	11	11	1,450 µg/L	
Selenium	✔		1	200.8	5.0	<5.0	<5.0	235.8 µg/L	
Silver	✔		1	200.8	0.2	<0.2	<0.2	35.1 µg/L	
Zinc		✔	1	200.8	10	38	38	420 µg/L	
Cyanide		✔	1	4500 CN	0.005	0.005	0.005	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX		✔	1	624.1		0.29	0.29	100 µg/L	---
Benzene	✔		1	624.1	0.13	<0.13	<0.13	5.0 µg/L	---
1,4 Dioxane	✔		1	624.1	21.5	<21.5	<21.5	200 µg/L	---
Acetone		✔	1	624.1	2.35	4.4	4.4	7.97 mg/L	---
Phenol	✔		1	625.1	9.9	<9.9	<9.9	1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		1	624.1	0.17	<0.17	<0.17	4.4 µg/L	
1,2 Dichlorobenzene	✔		1	624.1	0.1	<0.1	<0.1	600 µg/L	---
1,3 Dichlorobenzene	✔		1	624.1	0.09	<0.09	<0.09	320 µg/L	---
1,4 Dichlorobenzene	✔		1	624.1	0.11	<0.11	<0.11	5.0 µg/L	---
Total dichlorobenzene			1	624.1				763 µg/L in NH	---
1,1 Dichloroethane	✔		1	624.1	0.16	<0.16	<0.16	70 µg/L	---
1,2 Dichloroethane	✔		1	624.1	0.320	<0.320	<0.320	5.0 µg/L	---
1,1 Dichloroethylene	✔		1	624.1	0.16	<0.16	<0.16	3.2 µg/L	---
Ethylene Dibromide	✔		1	504.1	0.012	<0.012	<0.012	0.05 µg/L	---
Methylene Chloride	✔		1	624.1	0.3	<0.3	<0.3	4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	624.1	0.17	<0.17	<0.17	200 µg/L	---
1,1,2 Trichloroethane	✔		1	624.1	0.15	<0.15	<0.15	5.0 µg/L	---
Trichloroethylene	✔		1	624.1	0.18	<0.18	<0.18	5.0 µg/L	---
Tetrachloroethylene	✔		1	624.1	0.2	<0.2	<0.2	5.0 µg/L	
cis-1,2 Dichloroethylene	✔		1	624.1	0.17	<0.17	<0.17	70 µg/L	---
Vinyl Chloride	✔		1	624.1	0.2	<0.2	<0.2	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		1	625.1		ND	ND	190 µg/L	
Diethylhexyl phthalate	✔		1	625.1	9.90	<9.9	<9.9	101 µg/L	
Total Group I PAHs		✔	1	625.1		0.432	0.432	1.0 µg/L	---
Benzo(a)anthracene		✔	1	625.1	0.016	0.078	0.078	As Total PAHs	0.086
Benzo(a)pyrene		✔	1	625.1	0.012	0.085	0.085		0.086
Benzo(b)fluoranthene		✔	1	625.1	0.015	0.12	0.12		0.086
Benzo(k)fluoranthene	✔		1	625.1	0.012	<0.012	<0.012		0.086
Chrysene		✔	1	625.1	0.015	0.079	0.079		0.086
Dibenzo(a,h)anthracene	✔		1	625.1	0.017	<0.017	<0.017		0.086
Indeno(1,2,3-cd)pyrene		✔	1	625.1	0.018	0.07	0.07		0.086

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	✔		1	625.1		ND	ND	100 µg/L	---
Naphthalene	✔		1	625.1	4.95	<4.95	<4.95	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608.3		ND	ND	0.000064 µg/L	---
Pentachlorophenol	✔		1	625.1	0.33	<0.33	<0.33	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		1	1664B	2.8	<2.8	<2.8	5.0 mg/L	---
Ethanol	✔		1	624.1	34.2	<34.2	<34.2	Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	624.1	0.17	<0.17	<0.17	70 µg/L	
tert-Butyl Alcohol	✔		1	624.1	5.34	<5.34	<5.34	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	624.1	0.15	<0.15	<0.15	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
Hardness		✔	1	200.7		280	280		
pH		✔	1			7.3			
Receiving Water									
pH		✔	1			7.1			
Hardness		✔	1	200.7		56	56		
Chromium		✔	1	200.8		1.1	1.1		
Copper		✔	1	200.8		3.2	3.2		
Iron		✔	1	200.7		220	220		
Lead		✔	1	200.8		1.3	1.3		
Silver		✔	1	200.8		2.9	2.9		
Zinc		✔	1	200.8		14	14		

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption

■ Ion Exchange ■ Precipitation/Coagulation/Flocculation ■ Separation/Filtration ■ Other; if so, specify:

Base water treatment system will include bag filtration. Contingency treatment items include pH adjustment, chemical aided settling, carbon treatment and ion exchange resin.

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

Source water will be pumped to a 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 250 gpm, and the maximum flow will not exceed 500 gpm. Source water will enter two weir tanks, plumbed in parallel, at the head of the system, from the weir tanks, water will be pumped to a multi-bag filter skid (made up of two multi bag filter housings each containing six bag filters) and through a flow meter/totalizer 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: Base water treatment system will include bag filtration. Contingency treatment items include pH adjustment, chemical aided settling, carbon treatment and ion exchange resin.

Indicate if either of the following will occur (check any that apply):

☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Bag filtration Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	500
Provide the proposed maximum effluent flow in gpm.	500
Provide the average effluent flow in gpm.	250
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

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

F. Chemical and additive information

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

☐ Algaecides/biocides ☐ Antifoams ■ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ■ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ■ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ■ Other; if so, specify:
Contingency treatment items include pH adjustment and chemical aided settling systems.

2. Provide the following information for each chemical/additive, using attachments, if necessary:
LRT E-50 coagulant, LRT 823 flocculant, pH adjustment (sulfuric acid/sodium hydroxide). See attachments for further information.
a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

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

G. Endangered Species Act eligibility determination

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

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

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

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

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

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

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

H. National Historic Preservation Act eligibility determination

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

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

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

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

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

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

I. Supplemental information

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

WQBEL Spread Sheet, Dilution calcs and streamstats report, BWSC storm sewer map

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

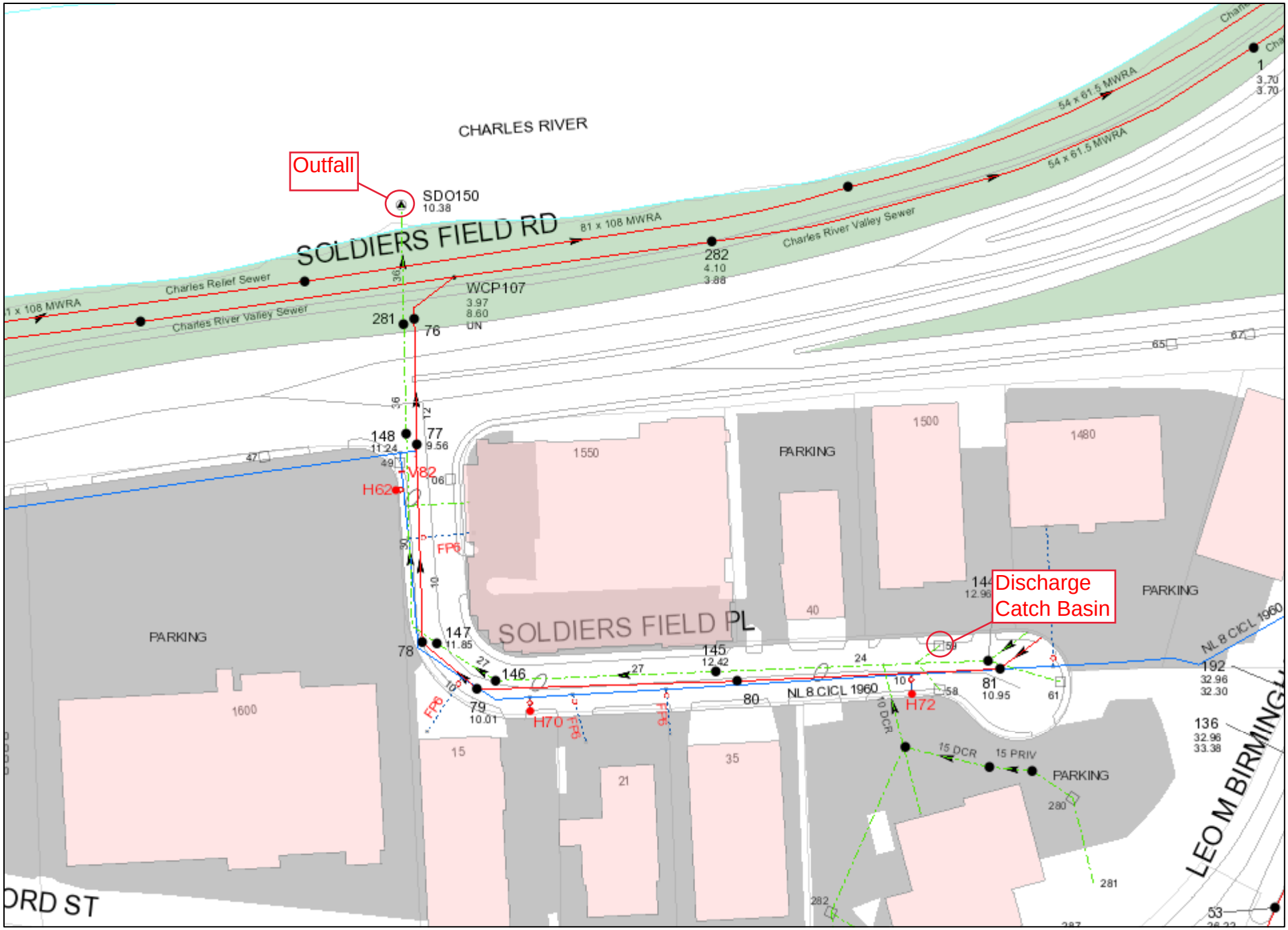
Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

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

BMPP certification statement:	A BMPP will be developed and maintained to meet the requirements of this permit. This BMPP will be implemented on-site prior to the initiation of discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: Stephen Ballas, Manager	Date: 04/09/2021
Print Name and Title: Stephen Ballas	

BWSC Stormwater System Map



BOSTON WATER AND SEWER

N W E S

0 50 100 200
Feet

SF

Dilution Calcs

DILUTION CALCULATIONS
1500 Soldiers Field Road
Boston, 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 24.7 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_S)

$$Q_S = \frac{24.1 ft^3}{sec} \times \frac{7.48 \text{ gallons}}{ft^3} \times \frac{86{,}400 \text{ sec}}{day} \times \frac{1 \text{ MG}}{1{,}000{,}000 \text{ gallons}} = 15.58 \text{ MGD}$$

Discharge Flow Rate (Q_D)

$$Q_D = \frac{500 \text{ gallons}}{min} \times \frac{1{,}440 \text{ min}}{day} \times \frac{1MG}{1{,}000{,}000 \text{ gallons}} = 0.720 \text{ MGD}$$

Dilution Factor (DF)

$$DF = \frac{Q_S + Q_D}{Q_D} = \frac{15.58 \text{ MGD} + 0.720 \text{ MDG}}{0.720 \text{ MGD}} = 22.64$$

From: Keohane, Kathleen (DEP)
To: Jake Jennings
Cc: Vakalopoulos, Catherine (DEP); Ruan, Xiaodan (DEP); Brian Caccavale
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA with increased discharge flow
Date: Wednesday, April 14, 2021 11:38:06 AM

You have sent a revision increasing the design flow from 300 to 500 gpm.

The 7Q10 of 24.1 cfs (15.58 MGD) and the dilution factor calculation of 22.64 using a design flow of 500 gpm (0.720 MGD) for the proposed discharge to the Charles River from 1500 Soldiers Field Road in Brighton is correct.

All other information remains the same. Let me know if you have any questions.

Kathleen M. Keohane
MassDEP Surface Water Discharge Permit Program
kathleen.Keohane@mass.gov

From: Jake Jennings <JJennings@lrt-llc.net>
Sent: Wednesday, April 14, 2021 11:23 AM
To: Keohane, Kathleen (DEP) <Kathleen.Keohane@mass.gov>
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA

Hi Kathleen,

Yes, thank you for catching that.

The 7 Day 10 Year Low Flow value from the streamstats report is 24.1 cfs and the calculated dilution factor at 500 gpm is 22.64.

I have attached the revised calcs.

Thank you,

Jake

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453
O: 774.450.7177
M: 978.751.5431

From: Keohane, Kathleen (DEP) <kathleen.keohane@state.ma.us>
Sent: Wednesday, April 14, 2021 11:08 AM
To: Jake Jennings <JJennings@lrt-llc.net>
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA

I get 26.64 for the DF. Please recheck your calculation.

From: Jake Jennings <JJennings@lrt-llc.net>
Sent: Tuesday, April 13, 2021 4:27 PM
To: Keohane, Kathleen (DEP) <Kathleen.Keohane@mass.gov>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>; Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>; Brian Caccavale <bcaccavale@lrt-llc.net>
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA

Hi Kathleen,

We are going to change the discharge rate for this project to 500 gpm I have attached our updated dilution calcs could you please confirm.

The project:
1500 SFR Boston, MA
We plan to discharge to a catch basin with an outfall in the Charles River (MA72-36)

The 7 Day 10 Year Low Flow value from the streamstats report is 24.1 cfs and the calculated dilution factor at 500 gpm is 16.58.

Let me know if you have any questions.

Thank you,

Jake Jennings

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453
O: 774.450.7177
M: 978.751.5431

From: Keohane, Kathleen (DEP) <kathleen.keohane@state.ma.us>
Sent: Monday, March 29, 2021 7:05 PM
To: Jake Jennings <JJennings@lrt-llc.net>; Brian Caccavale <bcaccavale@lrt-llc.net>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@state.ma.us>; Ruan, Xiaodan (DEP)

<xiaodan.ruan@state.ma.us>
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA

Hi Jake,

The 7Q10 of 24.1 cfs (15.58 MGD) and the dilution factor calculation of 37.06 using a design flow of 300 gpm (0.432 MGD) for the proposed discharge to the Charles River from 1500 Soldiers Field Road in Brighton is correct.

Here is water quality information to assist you with filling out the NOI (some of which you already have):

Waterbody and ID: Charles River (MA72-36)
Classification: B, Warm water fishery
Outstanding Resource Water?: No

State's most recent Integrated List is located here: https://www.epa.gov/sites/production/files/2020-01/documents/2016-ma-303d-list-report.pdf, search for "MA72-36" to see the causes of impairments.
TMDLs: There are approved TMDL (pathogens and phosphorus) for this segment.

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

Please let me know if you have any questions.

Hi Jake,

The 7Q10 of 24.1 cfs (15.58 MGD) and the dilution factor calculation of 37.06 using a design flow of 300 gpm (0.432 MGD) for the proposed discharge to the Charles River from 1500 Soldiers Field Road in Brighton is correct.

Here is water quality information to assist you with filling out the NOI (some of which you already have):

Waterbody and ID: Charles River (MA72-36)
Classification: B, Warm water fishery
Outstanding Resource Water?: No

State's most recent Integrated List is located here: https://www.epa.gov/sites/production/files/2020-01/documents/2016-ma-303d-list-report.pdf, search for "MA72-36" to see the causes of impairments.

TMDLs: There are approved TMDL (pathogens and phosphorus) for this segment.

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

Please let me know if you have any questions.

From: Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>
Sent: Friday, March 26, 2021 2:51 PM
To: Keohane, Kathleen (DEP) <Kathleen.Keohane@mass.gov>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>; Brian Caccavale <bcaccavale@lrt-llc.net>; Jake Jennings <JJennings@lrt-llc.net>
Subject: RE: Dilution Calcs 1500 Solders Field Road Brighton, MA

Hi Kathleen,

Could you please help look at this? I know you may not work today. Next week is fine. Thank you!

Xiaodan

From: Jake Jennings <JJennings@lrt-llc.net>
Sent: Friday, March 26, 2021 1:21 PM
To: Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>
Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>; Brian Caccavale <bcaccavale@lrt-llc.net>
Subject: Dilution Calcs 1500 Solders Field Road Brighton, MA

Hi Xiaodan,

I hope you are well. Please see attached dilution calcs for 1500 Solders Field Road (SFR) for your review and approval.

The project:
1500 SFR Boston, MA
We plan to discharge to a catch basin with an outfall in the Charles River (MA72-36)

The 7 Day 10 Year Low Flow value from the streamstats report is 24.1 cfs and the calculated

dilution factor at 300 gpm is 37.06.

Can you please confirm these values are correct.

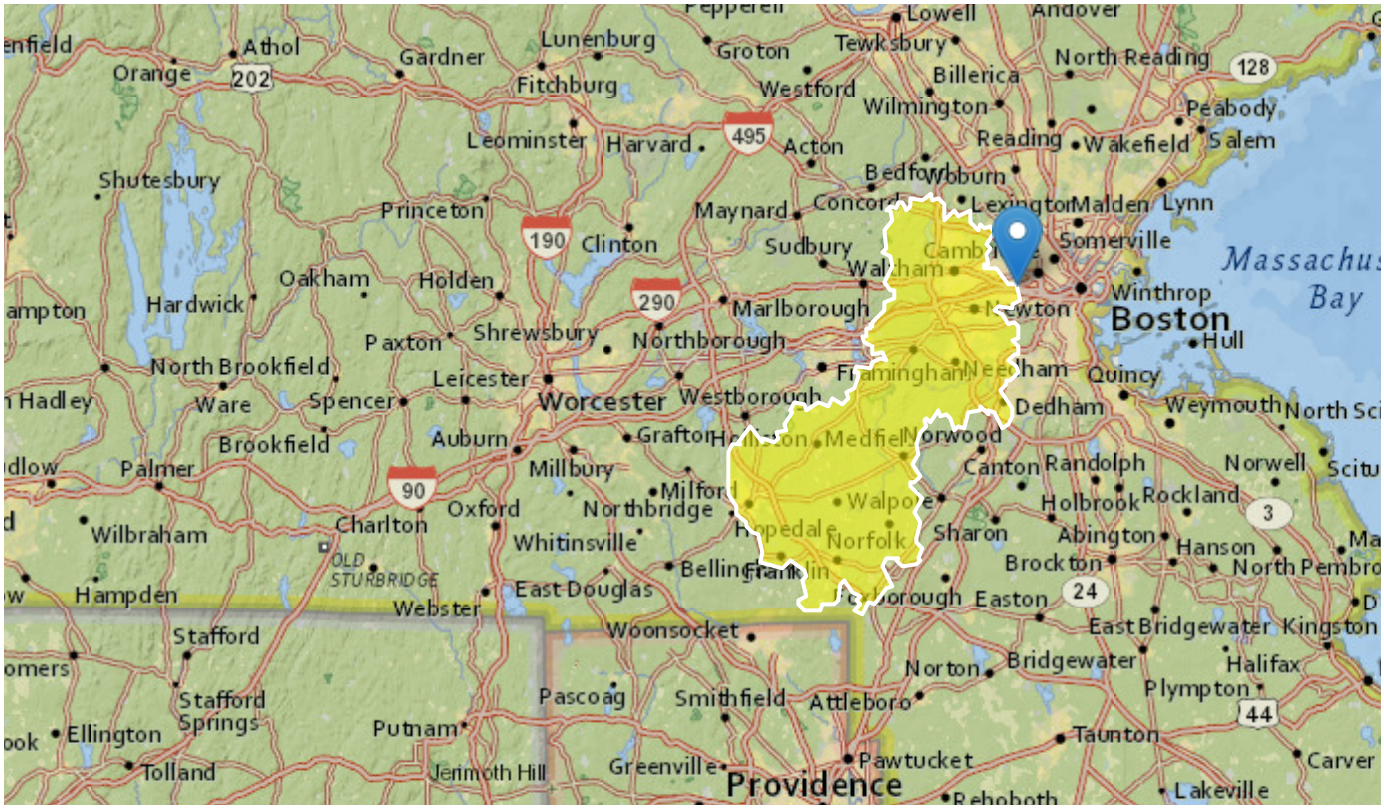
Thank you,

Jake

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453
O: 774.450.7177
M: 978.751.5431

StreamStats Report

Region ID: MA
Workspace ID: MA20210325203207081000
Clicked Point (Latitude, Longitude): 42.36100, -71.15021
Time: 2021-03-25 16:32:26 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	277	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.343	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.23	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	277	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.343	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.23	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	48.5	ft^3/s
7 Day 10 Year Low Flow	24.1	ft^3/s

Low-Flow Statistics Citations

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

Application Version: 4.4.0

MA Limits

WQBEL

Enter number values in green boxes below

Enter values in the units specified

↓

15.58	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

↓

22.64

Enter values in the units specified

↓

280	C_d = Enter influent hardness in **mg/L** $CaCO_3$
56	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

7.1	pH in **Standard Units**
14.5	Temperature in **°C**
0	Ammonia in **mg/L**
56	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
1.1	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
3.2	Copper in **µg/L**
220	Iron in **µg/L**
1.3	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
2.9	Silver in **µg/L**
14	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
0	Ammonia in **mg/L**
0	Antimony in **µg/L**
2.3	Arsenic in **µg/L**
0.4	Cadmium in **µg/L**
7.9	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
18	Copper in **µg/L**
5700	Iron in **µg/L**
16	Lead in **µg/L**
0	Mercury in **µg/L**
11	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
38	Zinc in **µg/L**
5	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0.078	Benzo(a)anthracene in **µg/L**
0.085	Benzo(a)pyrene in **µg/L**
0.12	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0.079	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0.07	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Dilution Factor	22.6					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	**0.2**	mg/L	249	µg/L	---	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	14489	µg/L		
Arsenic	**104**	µg/L	226	µg/L		
Cadmium	**10.2**	µg/L	4.4978	µg/L		
Chromium III	**323**	µg/L	1362.6	µg/L		
Chromium VI	**323**	µg/L	258.9	µg/L		
Copper	**242**	µg/L	78.6	µg/L		
Iron	**5000**	µg/L	17878	µg/L		
Lead	160	µg/L	**14.22**	µg/L		
Mercury	**0.739**	µg/L	20.51	µg/L		
Nickel	**1450**	µg/L	829.8	µg/L		
Selenium	**235.8**	µg/L	113.2	µg/L		
Silver	**35.1**	µg/L	1.8	µg/L		
Zinc	**420**	µg/L	1602.0	µg/L		
Cyanide	**178**	mg/L	117.7	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	6792	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	36.2	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	74.7	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			

D. Non-Halogenated SVOCs

Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	49.8	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0860**	µg/L	0.1	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0860	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			

E. Halogenated SVOCs

Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			

F. Fuels Parameters

Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	453	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Appendix B

Laboratory Data

con-test®
A Pace Analytical® Laboratory

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

March 29, 2021

Brian Caccavale
Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453

Project Location: 1500 Soldiers Field Road, Brighton, MA
Client Job Number:
Project Number: 2-2127
Laboratory Work Order Number: 21C1128

Enclosed are results of analyses for samples received by the laboratory on March 22, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

Table of Contents

Table of Contents (continued)

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: Brian Caccavale

REPORT DATE: 3/29/2021

PURCHASE ORDER NUMBER: 2-2127

PROJECT NUMBER: 2-2127

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21C1128

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

PROJECT LOCATION: 1500 Soldiers Field Road, Brighton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Influent	21C1128-01	Ground Water		608.3	
				624.1	
				625.1	
				EPA 1664B	
				EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				EPA 300.0	
				EPA 504.1	
				SM19-22 4500 NH3 C	
				SM21-22 2540D	
				SM21-22 3500 Cr B	
				SM21-22 4500 CL G	
				SM21-22 4500 CN E	MA M-MA-086/CT PH-0574/NY11148
				Tri Chrome Calc.	
Receiving Water	21C1128-02	Water		EPA 200.7	
				EPA 200.8	
				EPA 245.1	
				SM19-22 4500 NH3 C	
				SM21-22 2540D	
				SM21-22 3500 Cr B	
				Tri Chrome Calc.	

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CASE NARRATIVE SUMMARY

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

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

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:

Benzidine
21C1128-01[Influent], B278676-BLK1, B278676-BS1, B278676-BSD1

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:

Benzidine
21C1128-01[Influent], B278676-BLK1, B278676-BS1, B278676-BSD1

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
21C1128-01[Influent], S058195-CCV1

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
21C1128-01[Influent], B278676-BLK1, B278676-BS1, B278676-BSD1, S058195-CCV1

V-34

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

Analyte & Samples(s) Qualified:

Benzidine
21C1128-01[Influent], S058195-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 estimated.

Analyte & Samples(s) Qualified:

Benzidine
B278676-BLK1, B278676-BS1, B278676-BSD1

SM21-22 2540D

Qualifications:

R-02

Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.

Analyte & Samples(s) Qualified:

Total Suspended Solids
21C1128-01[Influent], B278561-DUP2

SM21-22 3500 Cr B

Qualifications:

H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

Hexavalent Chromium
21C1128-01[Influent], 21C1128-02[Receiving Water]

SM21-22 4500 CL G

Qualifications:

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

H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

Chlorine, Residual
21C1128-01[Influent]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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

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

Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	4.40	50.0	2.35	µg/L	1	J	624.1	3/23/21	3/23/21 17:31	LBD
tert-Amyl Methyl Ether (TAME)	<0.150	0.500	0.150	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Benzene	<0.130	1.00	0.130	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Bromodichloromethane	<0.140	2.00	0.140	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Bromoform	<0.290	2.00	0.290	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Bromomethane	<1.07	5.00	1.07	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
tert-Butyl Alcohol (TBA)	<5.34	20.0	5.34	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Carbon Tetrachloride	<0.170	2.00	0.170	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Chlorobenzene	<0.0800	2.00	0.0800	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Chlorodibromomethane	<0.160	2.00	0.160	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Chloroethane	<0.370	2.00	0.370	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Chloroform	<0.190	2.00	0.190	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Chloromethane	<0.380	2.00	0.380	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,2-Dichlorobenzene	<0.100	2.00	0.100	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,3-Dichlorobenzene	<0.0900	2.00	0.0900	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,4-Dichlorobenzene	<0.110	2.00	0.110	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,2-Dichloroethane	<0.320	2.00	0.320	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,1-Dichloroethane	<0.160	2.00	0.160	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,1-Dichloroethylene	<0.160	2.00	0.160	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
trans-1,2-Dichloroethylene	<0.170	2.00	0.170	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,2-Dichloropropane	<0.180	2.00	0.180	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
cis-1,3-Dichloropropene	<0.120	2.00	0.120	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,4-Dioxane	<21.5	50.0	21.5	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
trans-1,3-Dichloropropene	<0.150	2.00	0.150	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Ethanol	<34.2	50.0	34.2	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Ethylbenzene	<0.0900	2.00	0.0900	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Methyl tert-Butyl Ether (MTBE)	<0.170	2.00	0.170	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Methylene Chloride	<0.300	5.00	0.300	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,1,2,2-Tetrachloroethane	<0.0900	2.00	0.0900	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Tetrachloroethylene	<0.200	2.00	0.200	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Toluene	0.290	1.00	0.110	µg/L	1	J	624.1	3/23/21	3/23/21 17:31	LBD
1,1,1-Trichloroethane	<0.170	2.00	0.170	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
1,1,2-Trichloroethane	<0.150	2.00	0.150	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Trichloroethylene	<0.180	2.00	0.180	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Trichlorofluoromethane (Freon 11)	<0.190	2.00	0.190	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
Vinyl Chloride	<0.200	2.00	0.200	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
m+p Xylene	<0.180	2.00	0.180	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD
o-Xylene	<0.0900	1.00	0.0900	µg/L	1		624.1	3/23/21	3/23/21 17:31	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	90.2	70-130		3/23/21 17:31
Toluene-d8	97.2	70-130		3/23/21 17:31
4-Bromofluorobenzene	94.1	70-130		3/23/21 17:31

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzo(a)anthracene (SIM)	0.078	0.050	0.016	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR
Benzo(a)pyrene (SIM)	0.085	0.099	0.012	µg/L	1	J	625.1	3/24/21	3/26/21 12:14	IMR
Benzo(b)fluoranthene (SIM)	0.12	0.050	0.015	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR
Benzo(k)fluoranthene (SIM)	<0.012	0.20	0.012	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR
Bis(2-ethylhexyl)phthalate (SIM)	<0.42	0.99	0.42	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR
Chrysene (SIM)	0.079	0.20	0.015	µg/L	1	J	625.1	3/24/21	3/26/21 12:14	IMR
Dibenz(a,h)anthracene (SIM)	<0.017	0.099	0.017	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR
Indeno(1,2,3-cd)pyrene (SIM)	0.070	0.099	0.018	µg/L	1	J	625.1	3/24/21	3/26/21 12:14	IMR
Pentachlorophenol (SIM)	<0.33	0.99	0.33	µg/L	1		625.1	3/24/21	3/26/21 12:14	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	40.9	30-130		3/26/21 12:14
2-Fluorobiphenyl	48.4	30-130		3/26/21 12:14
p-Terphenyl-d14	58.9	30-130		3/26/21 12:14

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Acenaphthylene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Anthracene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Benzidine	<19.8	19.8	µg/L	1	V-04, V-05, L-04, R-05, V-34	625.1	3/24/21	3/26/21 13:43	BGL
Benzo(g,h,i)perylene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
4-Bromophenylphenylether	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Butylbenzylphthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
4-Chloro-3-methylphenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Bis(2-chloroethyl)ether	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Bis(2-chloroisopropyl)ether	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2-Chloronaphthalene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2-Chlorophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
4-Chlorophenylphenylether	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Di-n-butylphthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
1,3-Dichlorobenzene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
1,4-Dichlorobenzene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
1,2-Dichlorobenzene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
3,3-Dichlorobenzidine	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,4-Dichlorophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Diethylphthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,4-Dimethylphenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Dimethylphthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
4,6-Dinitro-2-methylphenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,4-Dinitrophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,4-Dinitrotoluene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,6-Dinitrotoluene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Di-n-octylphthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
1,2-Diphenylhydrazine/Azobenzene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Bis(2-Ethylhexyl)phthalate	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Fluoranthene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Fluorene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Hexachlorobenzene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Hexachlorobutadiene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Hexachlorocyclopentadiene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Hexachloroethane	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Isophorone	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Naphthalene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Nitrobenzene	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2-Nitrophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
4-Nitrophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
N-Nitrosodimethylamine	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
N-Nitrosodi-n-propylamine	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2-Methylnaphthalene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL

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

Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Phenanthrene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2-Methylphenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Phenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
3/4-Methylphenol	<19.8	19.8	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
Pyrene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
1,2,4-Trichlorobenzene	<4.95	4.95	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL
2,4,6-Trichlorophenol	<9.90	9.90	µg/L	1		625.1	3/24/21	3/26/21 13:43	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	29.0	15-110		3/26/21 13:43
Phenol-d6	24.1	15-110		3/26/21 13:43
Nitrobenzene-d5	44.0	30-130		3/26/21 13:43
2-Fluorobiphenyl	58.2	30-130		3/26/21 13:43
2,4,6-Tribromophenol	82.4	15-110		3/26/21 13:43
p-Terphenyl-d14	91.4	30-130		3/26/21 13:43

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	<0.0920	0.100	0.0920	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1221 [1]	<0.0805	0.100	0.0805	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1232 [1]	<0.0995	0.100	0.0995	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1242 [1]	<0.0865	0.100	0.0865	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1248 [1]	<0.0950	0.100	0.0950	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1254 [1]	<0.0525	0.100	0.0525	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG
Aroclor-1260 [1]	<0.0980	0.100	0.0980	µg/L	1		608.3	3/25/21	3/26/21 11:09	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	66.6	30-150		3/26/21 11:09
Decachlorobiphenyl [2]	58.1	30-150		3/26/21 11:09
Tetrachloro-m-xylene [1]	74.3	30-150		3/26/21 11:09
Tetrachloro-m-xylene [2]	69.8	30-150		3/26/21 11:09

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Arsenic	2.3	0.80		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Cadmium	0.40	0.20		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Chromium	7.9	1.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Chromium, Trivalent	0.0			mg/L	1		Tri Chrome Calc.	3/23/21	3/24/21 15:47	TBC
Copper	18	1.0		µg/L	1		EPA 200.8	3/23/21	3/25/21 11:55	MJH
Iron	5.7	0.050		mg/L	1		EPA 200.7	3/24/21	3/25/21 16:13	MJH
Lead	16	0.50		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Mercury	ND	0.00010		mg/L	1		EPA 245.1	3/23/21	3/24/21 11:23	CJV
Nickel	11	5.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Silver	ND	0.20		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Zinc	38	10		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:54	TBC
Hardness	280	1.4		mg/L	1		EPA 200.7	3/24/21	3/25/21 16:13	MJH

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

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

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ammonia as N	ND	0.30	0.22	mg/L	1		SM19-22 4500 NH3 C	3/23/21	3/24/21 10:00	AYK
Chloride	1400	100		mg/L	100		EPA 300.0	3/29/21	3/29/21 11:55	IS
Chlorine, Residual	ND	0.020		mg/L	1	H-03	SM21-22 4500 CL G	3/22/21	3/22/21 21:25	DJM
Hexavalent Chromium	ND	0.0040		mg/L	1	H-03	SM21-22 3500 Cr B	3/22/21	3/22/21 22:15	DJM
Total Suspended Solids	240	5.0		mg/L	1	R-02	SM21-22 2540D	3/23/21	3/23/21 13:00	LL
Silica Gel Treated HEM (SGT-HEM)	ND	2.8		mg/L	1		EPA 1664B	3/23/21	3/23/21 9:30	LL

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

Drinking Water Organics EPA 504.1

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,2-Dibromoethane (EDB) (1)	ND	0.020	0.012	µg/L	1		EPA 504.1	3/26/21	3/26/21 20:46	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,3-Dibromopropane (1)	99.3	70-130		3/26/21 20:46

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Influent Sampled: 3/19/2021 14:25

Sample ID: 21C1128-01

Sample Matrix: Ground Water

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

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Cyanide	0.005	0.005	0.001	mg/L	1		SM21-22 4500 CN E	3/24/21	3/25/21 9:58	AAL

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Receiving Water Sampled: 3/19/2021 13:50

Sample ID: 21C1128-02

Sample Matrix: Water

Metals Analyses (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Antimony	ND	1.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Arsenic	ND	0.80		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Cadmium	ND	0.20		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Chromium	1.1	1.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Chromium, Trivalent	0.0			mg/L	1		Tri Chrome Calc.	3/23/21	3/24/21 15:47	TBC
Copper	3.2	1.0		µg/L	1		EPA 200.8	3/23/21	3/25/21 11:58	MJH
Iron	0.22	0.050		mg/L	1		EPA 200.7	3/24/21	3/25/21 16:20	MJH
Lead	1.3	0.50		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Mercury	ND	0.00010		mg/L	1		EPA 245.1	3/23/21	3/24/21 11:25	CJV
Nickel	ND	5.0		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Selenium	ND	5.0	1.6	µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Silver	2.9	0.20		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Zinc	14	10		µg/L	1		EPA 200.8	3/23/21	3/24/21 12:58	TBC
Hardness	56	1.4		mg/L	1		EPA 200.7	3/24/21	3/25/21 16:20	MJH

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Project Location: 1500 Soldiers Field Road, Brighto Sample Description: Work Order: 21C1128

Date Received: 3/22/2021

Field Sample #: Receiving Water Sampled: 3/19/2021 13:50

Sample ID: 21C1128-02

Sample Matrix: Water

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

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ammonia as N	ND	0.30	0.22	mg/L	1		SM19-22 4500 NH3 C	3/23/21	3/24/21 10:00	AYK
Hexavalent Chromium	ND	0.0040		mg/L	1	H-03	SM21-22 3500 Cr B	3/22/21	3/22/21 22:15	DJM
Total Suspended Solids	1.2	1.0		mg/L	1		SM21-22 2540D	3/23/21	3/23/21 13:00	LL

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Sample Extraction Data

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278784	1000	5.00	03/25/21

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278597	5	5.00	03/23/21

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278676	1010	1.00	03/24/21

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278842	1010	1.00	03/24/21

EPA 1664B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278555	500		03/23/21

Prep Method: EPA 200.7 **Analytical Method: EPA 200.7**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278718	50.0	50.0	03/24/21
21C1128-01 [Influent]	B278718	50.0		03/24/21
21C1128-02 [Receiving Water]	B278718	50.0	50.0	03/24/21
21C1128-02 [Receiving Water]	B278718	50.0		03/24/21

Prep Method: EPA 200.8 **Analytical Method: EPA 200.8**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278639	50.0	50.0	03/23/21
21C1128-02 [Receiving Water]	B278639	50.0	50.0	03/23/21

Prep Method: EPA 245.1 **Analytical Method: EPA 245.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278577	6.00	6.00	03/23/21
21C1128-02 [Receiving Water]	B278577	6.00	6.00	03/23/21

Prep Method: EPA 300.0 **Analytical Method: EPA 300.0**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date

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Sample Extraction Data

Prep Method: EPA 300.0 **Analytical Method: EPA 300.0**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278965	10.0	10.0	03/29/21

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278913	35.7	35.0	03/26/21

SM19-22 4500 NH3 C

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278643	100	100	03/23/21
21C1128-02 [Receiving Water]	B278643	100	100	03/23/21

SM21-22 2540D

Lab Number [Field ID]	Batch	Initial [mL]	Date
21C1128-01 [Influent]	B278561	100	03/23/21
21C1128-02 [Receiving Water]	B278561	500	03/23/21

SM21-22 3500 Cr B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278549	50.0	50.0	03/22/21
21C1128-02 [Receiving Water]	B278549	50.0	50.0	03/22/21

SM21-22 4500 CL G

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1128-01 [Influent]	B278550	100	100	03/22/21

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

Lab Number [Field ID]	Batch	Initial [mL]	Date
21C1128-01 [Influent]	B278639	50.0	03/23/21
21C1128-02 [Receiving Water]	B278639	50.0	03/23/21

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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 B278597 - SW-846 5030B										
Blank (B278597-BLK1)				Prepared & Analyzed: 03/23/21						
Acetone	ND	50.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.500	µg/L							
Benzene	ND	1.00	µg/L							
Bromodichloromethane	ND	2.00	µg/L							
Bromoform	ND	2.00	µg/L							
Bromomethane	ND	2.00	µg/L							
tert-Butyl Alcohol (TBA)	ND	20.0	µg/L							
Carbon Tetrachloride	ND	2.00	µg/L							
Chlorobenzene	ND	2.00	µg/L							
Chlorodibromomethane	ND	2.00	µg/L							
Chloroethane	ND	2.00	µg/L							
Chloroform	ND	2.00	µg/L							
Chloromethane	ND	2.00	µg/L							
1,2-Dichlorobenzene	ND	2.00	µg/L							
1,3-Dichlorobenzene	ND	2.00	µg/L							
1,4-Dichlorobenzene	ND	2.00	µg/L							
1,2-Dichloroethane	ND	2.00	µg/L							
1,1-Dichloroethane	ND	2.00	µg/L							
1,1-Dichloroethylene	ND	2.00	µg/L							
trans-1,2-Dichloroethylene	ND	2.00	µg/L							
1,2-Dichloropropane	ND	2.00	µg/L							
cis-1,3-Dichloropropene	ND	2.00	µg/L							
1,4-Dioxane	ND	50.0	µg/L							
trans-1,3-Dichloropropene	ND	2.00	µg/L							
Ethanol	ND	50.0	µg/L							
Ethylbenzene	ND	2.00	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	2.00	µg/L							
Methylene Chloride	ND	5.00	µg/L							
1,1,2,2-Tetrachloroethane	ND	2.00	µg/L							
Tetrachloroethylene	ND	2.00	µg/L							
Toluene	ND	1.00	µg/L							
1,1,1-Trichloroethane	ND	2.00	µg/L							
1,1,2-Trichloroethane	ND	2.00	µg/L							
Trichloroethylene	ND	2.00	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.00	µg/L							
Vinyl Chloride	ND	2.00	µg/L							
m+p Xylene	ND	2.00	µg/L							
o-Xylene	ND	1.00	µg/L							
Surrogate: 1,2-Dichloroethane-d4	*22.6*		µg/L	25.0		90.6	70-130			
Surrogate: Toluene-d8	*24.2*		µg/L	25.0		96.9	70-130			
Surrogate: 4-Bromofluorobenzene	*23.8*		µg/L	25.0		95.4	70-130			
LCS (B278597-BS1)				Prepared & Analyzed: 03/23/21						
Acetone	180	50.0	µg/L	200		87.8	70-160			†
tert-Amyl Methyl Ether (TAME)	18	0.500	µg/L	20.0		90.7	70-130			
Benzene	17	1.00	µg/L	20.0		86.5	65-135			
Bromodichloromethane	19	2.00	µg/L	20.0		96.6	65-135			
Bromoform	22	2.00	µg/L	20.0		110	70-130			
Bromomethane	27	2.00	µg/L	20.0		136	15-185			
tert-Butyl Alcohol (TBA)	170	20.0	µg/L	200		83.4	40-160			†
Carbon Tetrachloride	19	2.00	µg/L	20.0		92.7	70-130			
Chlorobenzene	20	2.00	µg/L	20.0		100	65-135			

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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 B278597 - SW-846 5030B										
LCS (B278597-BS1)				Prepared & Analyzed: 03/23/21						
Chlorodibromomethane	20	2.00	µg/L	20.0		102	70-135			
Chloroethane	16	2.00	µg/L	20.0		82.2	40-160			
Chloroform	18	2.00	µg/L	20.0		88.8	70-135			
Chloromethane	5.0	2.00	µg/L	20.0		24.8	20-205			
1,2-Dichlorobenzene	19	2.00	µg/L	20.0		94.0	65-135			
1,3-Dichlorobenzene	19	2.00	µg/L	20.0		94.9	70-130			
1,4-Dichlorobenzene	19	2.00	µg/L	20.0		93.7	65-135			
1,2-Dichloroethane	19	2.00	µg/L	20.0		96.1	70-130			
1,1-Dichloroethane	19	2.00	µg/L	20.0		94.6	70-130			
1,1-Dichloroethylene	19	2.00	µg/L	20.0		96.8	50-150			
trans-1,2-Dichloroethylene	18	2.00	µg/L	20.0		88.0	70-130			
1,2-Dichloropropane	20	2.00	µg/L	20.0		101	35-165			
cis-1,3-Dichloropropene	18	2.00	µg/L	20.0		87.8	25-175			
1,4-Dioxane	200	50.0	µg/L	200		99.1	40-130			†
trans-1,3-Dichloropropene	19	2.00	µg/L	20.0		93.4	50-150			
Ethanol	150	50.0	µg/L	200		72.5	40-160			
Ethylbenzene	20	2.00	µg/L	20.0		97.6	60-140			
Methyl tert-Butyl Ether (MTBE)	18	2.00	µg/L	20.0		90.0	70-130			
Methylene Chloride	15	5.00	µg/L	20.0		76.6	60-140			
1,1,2,2-Tetrachloroethane	20	2.00	µg/L	20.0		101	60-140			
Tetrachloroethylene	20	2.00	µg/L	20.0		100	70-130			
Toluene	19	1.00	µg/L	20.0		92.7	70-130			
1,1,1-Trichloroethane	18	2.00	µg/L	20.0		92.0	70-130			
1,1,2-Trichloroethane	20	2.00	µg/L	20.0		101	70-130			
Trichloroethylene	19	2.00	µg/L	20.0		96.2	65-135			
Trichlorofluoromethane (Freon 11)	16	2.00	µg/L	20.0		79.6	50-150			
Vinyl Chloride	12	2.00	µg/L	20.0		59.7	5-195			
m+p Xylene	39	2.00	µg/L	40.0		97.2	70-130			
o-Xylene	20	1.00	µg/L	20.0		97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	*21.8*		µg/L	25.0		87.2	70-130			
Surrogate: Toluene-d8	*23.7*		µg/L	25.0		94.8	70-130			
Surrogate: 4-Bromofluorobenzene	*24.7*		µg/L	25.0		98.7	70-130			

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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 B278842 - SW-846 3510C										
Blank (B278842-BLK1)				Prepared: 03/24/21 Analyzed: 03/25/21						
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							
Surrogate: Nitrobenzene-d5	*98.4*		µg/L	100		98.4	30-130			
Surrogate: 2-Fluorobiphenyl	*87.6*		µg/L	100		87.6	30-130			
Surrogate: p-Terphenyl-d14	*81.1*		µg/L	100		81.1	30-130			
LCS (B278842-BS1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Benzo(a)anthracene (SIM)	37.1	1.0	µg/L	50.0		74.3	33-143			
Benzo(a)pyrene (SIM)	36.8	2.0	µg/L	50.0		73.6	17-163			
Benzo(b)fluoranthene (SIM)	41.9	1.0	µg/L	50.0		83.7	24-159			
Benzo(k)fluoranthene (SIM)	41.4	4.0	µg/L	50.0		82.8	11-162			
Bis(2-ethylhexyl)phthalate (SIM)	42.0	20	µg/L	50.0		84.1	8-158			
Chrysene (SIM)	36.0	4.0	µg/L	50.0		72.1	17-168			
Dibenz(a,h)anthracene (SIM)	40.4	2.0	µg/L	50.0		80.9	10-227			
Indeno(1,2,3-cd)pyrene (SIM)	42.2	2.0	µg/L	50.0		84.4	10-171			
Pentachlorophenol (SIM)	36.7	20	µg/L	50.0		73.4	14-176			
Surrogate: Nitrobenzene-d5	*72.0*		µg/L	100		72.0	30-130			
Surrogate: 2-Fluorobiphenyl	*76.4*		µg/L	100		76.4	30-130			
Surrogate: p-Terphenyl-d14	*63.1*		µg/L	100		63.1	30-130			
LCS Dup (B278842-BSD1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Benzo(a)anthracene (SIM)	38.4	1.0	µg/L	50.0		76.8	33-143	3.28	53	
Benzo(a)pyrene (SIM)	38.0	2.0	µg/L	50.0		76.0	17-163	3.15	72	
Benzo(b)fluoranthene (SIM)	43.2	1.0	µg/L	50.0		86.4	24-159	3.10	71	
Benzo(k)fluoranthene (SIM)	42.7	4.0	µg/L	50.0		85.3	11-162	3.00	63	
Bis(2-ethylhexyl)phthalate (SIM)	43.8	20	µg/L	50.0		87.7	8-158	4.19	82	
Chrysene (SIM)	37.4	4.0	µg/L	50.0		74.9	17-168	3.81	87	
Dibenz(a,h)anthracene (SIM)	41.7	2.0	µg/L	50.0		83.4	10-227	3.02	126	
Indeno(1,2,3-cd)pyrene (SIM)	43.6	2.0	µg/L	50.0		87.3	10-171	3.31	99	
Pentachlorophenol (SIM)	36.6	20	µg/L	50.0		73.2	14-176	0.164	86	
Surrogate: Nitrobenzene-d5	*71.3*		µg/L	100		71.3	30-130			
Surrogate: 2-Fluorobiphenyl	*81.0*		µg/L	100		81.0	30-130			
Surrogate: p-Terphenyl-d14	*64.5*		µg/L	100		64.5	30-130			

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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 B278676 - SW-846 3510C										
Blank (B278676-BLK1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Acenaphthene	ND	5.00	µg/L							
Acenaphthylene	ND	5.00	µg/L							
Anthracene	ND	5.00	µg/L							
Benzidine	ND	20.0	µg/L							L-04, R-05, 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	µg/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	µg/L							
1,3-Dichlorobenzene	ND	5.00	µg/L							
1,4-Dichlorobenzene	ND	5.00	µg/L							
1,2-Dichlorobenzene	ND	5.00	µg/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	10.0	µg/L							
1,2-Diphenylhydrazine/Azobenzene	ND	10.0	µg/L							
Bis(2-Ethylhexyl)phthalate	ND	10.0	µg/L							
Fluoranthene	ND	5.00	µg/L							
Fluorene	ND	5.00	µg/L							
Hexachlorobenzene	ND	10.0	µg/L							
Hexachlorobutadiene	ND	10.0	µg/L							
Hexachlorocyclopentadiene	ND	10.0	µg/L							
Hexachloroethane	ND	10.0	µg/L							
Isophorone	ND	10.0	µg/L							
Naphthalene	ND	5.00	µg/L							
Nitrobenzene	ND	10.0	µg/L							
2-Nitrophenol	ND	10.0	µg/L							
4-Nitrophenol	ND	10.0	µg/L							
N-Nitrosodimethylamine	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	*117*		µg/L	200		58.5	15-110			

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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 B278676 - SW-846 3510C											
Blank (B278676-BLK1)				Prepared: 03/24/21 Analyzed: 03/25/21							
Surrogate: Phenol-d6	*88.6*		µg/L	200		44.3		15-110			
Surrogate: Nitrobenzene-d5	*86.6*		µg/L	100		86.6		30-130			
Surrogate: 2-Fluorobiphenyl	*86.3*		µg/L	100		86.3		30-130			
Surrogate: 2,4,6-Tribromophenol	*90.5*		µg/L	100		90.5		15-110			
Surrogate: p-Terphenyl-d14	*99.7*		µg/L	100		99.7		30-130			
LCS (B278676-BS1)				Prepared: 03/24/21 Analyzed: 03/25/21							
Acenaphthene	37.0	5.00	µg/L	50.0		74.0		47-145			
Acenaphthylene	36.3	5.00	µg/L	50.0		72.5		33-145			
Anthracene	39.0	5.00	µg/L	50.0		78.0		27-133			
Benzidine	7.16	20.0	µg/L	50.0		**14.3**	*	40-140			V-05, L-04, R-05, V-35
Benzo(g,h,i)perylene	31.2	5.00	µg/L	50.0		62.5		10-219			
4-Bromophenylphenylether	34.8	10.0	µg/L	50.0		69.6		53-127			
Butylbenzylphthalate	40.7	10.0	µg/L	50.0		81.3		10-152			
4-Chloro-3-methylphenol	38.4	10.0	µg/L	50.0		76.7		22-147			
Bis(2-chloroethyl)ether	31.9	10.0	µg/L	50.0		63.9		12-158			
Bis(2-chloroisopropyl)ether	39.6	10.0	µg/L	50.0		79.2		36-166			
2-Chloronaphthalene	32.0	10.0	µg/L	50.0		64.1		60-120			
2-Chlorophenol	30.7	10.0	µg/L	50.0		61.4		23-134			
4-Chlorophenylphenylether	36.4	10.0	µg/L	50.0		72.8		25-158			
Di-n-butylphthalate	40.6	10.0	µg/L	50.0		81.2		10-120			
1,3-Dichlorobenzene	24.8	5.00	µg/L	50.0		49.7		10-172			
1,4-Dichlorobenzene	25.3	5.00	µg/L	50.0		50.6		20-124			
1,2-Dichlorobenzene	25.8	5.00	µg/L	50.0		51.7		32-129			
3,3-Dichlorobenzidine	42.2	10.0	µg/L	50.0		84.4		10-262			
2,4-Dichlorophenol	36.1	10.0	µg/L	50.0		72.1		39-135			
Diethylphthalate	38.8	10.0	µg/L	50.0		77.6		10-120			
2,4-Dimethylphenol	35.3	10.0	µg/L	50.0		70.6		32-120			
Dimethylphthalate	38.5	10.0	µg/L	50.0		77.1		10-120			
4,6-Dinitro-2-methylphenol	39.8	10.0	µg/L	50.0		79.5		10-181			
2,4-Dinitrophenol	41.3	10.0	µg/L	50.0		82.6		10-191			
2,4-Dinitrotoluene	40.2	10.0	µg/L	50.0		80.5		39-139			
2,6-Dinitrotoluene	40.0	10.0	µg/L	50.0		79.9		50-158			
Di-n-octylphthalate	44.2	10.0	µg/L	50.0		88.3		4-146			
1,2-Diphenylhydrazine/Azobenzene	39.6	10.0	µg/L	50.0		79.2		40-140			
Bis(2-Ethylhexyl)phthalate	41.1	10.0	µg/L	50.0		82.3		8-158			
Fluoranthene	40.5	5.00	µg/L	50.0		80.9		26-137			
Fluorene	38.7	5.00	µg/L	50.0		77.4		59-121			
Hexachlorobenzene	34.3	10.0	µg/L	50.0		68.6		10-152			
Hexachlorobutadiene	26.4	10.0	µg/L	50.0		52.8		24-120			
Hexachlorocyclopentadiene	27.0	10.0	µg/L	50.0		53.9		40-140			
Hexachloroethane	24.6	10.0	µg/L	50.0		49.1		40-120			
Isophorone	39.0	10.0	µg/L	50.0		78.0		21-196			
Naphthalene	31.9	5.00	µg/L	50.0		63.7		21-133			
Nitrobenzene	32.6	10.0	µg/L	50.0		65.2		35-180			
2-Nitrophenol	34.1	10.0	µg/L	50.0		68.2		29-182			
4-Nitrophenol	20.7	10.0	µg/L	50.0		41.5		10-132			
N-Nitrosodimethylamine	21.1	10.0	µg/L	50.0		42.2		40-140			
N-Nitrosodi-n-propylamine	34.3	10.0	µg/L	50.0		68.6		10-230			
2-Methylnaphthalene	38.0	5.00	µg/L	50.0		75.9		40-140			
Phenanthrene	39.1	5.00	µg/L	50.0		78.2		54-120			
2-Methylphenol	31.7	10.0	µg/L	50.0		63.3		40-140			

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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 B278676 - SW-846 3510C												
LCS (B278676-BS1)				Prepared: 03/24/21 Analyzed: 03/25/21								
Phenol	15.8	10.0	µg/L	50.0		31.5		5-120				
3/4-Methylphenol	31.1	20.0	µg/L	50.0		62.2		40-140				
Pyrene	41.7	5.00	µg/L	50.0		83.3		52-120				
1,2,4-Trichlorobenzene	28.7	5.00	µg/L	50.0		57.5		44-142				
2,4,6-Trichlorophenol	36.8	10.0	µg/L	50.0		73.5		37-144				
Surrogate: 2-Fluorophenol	*89.4*		µg/L	200		44.7		15-110				
Surrogate: Phenol-d6	*73.5*		µg/L	200		36.8		15-110				
Surrogate: Nitrobenzene-d5	*72.7*		µg/L	100		72.7		30-130				
Surrogate: 2-Fluorobiphenyl	*78.9*		µg/L	100		78.9		30-130				
Surrogate: 2,4,6-Tribromophenol	*80.7*		µg/L	100		80.7		15-110				
Surrogate: p-Terphenyl-d14	*88.3*		µg/L	100		88.3		30-130				
LCS Dup (B278676-BSD1)				Prepared: 03/24/21 Analyzed: 03/25/21								
Acenaphthene	39.8	5.00	µg/L	50.0		79.7		47-145	7.39		48	
Acenaphthylene	39.3	5.00	µg/L	50.0		78.6		33-145	8.02		74	
Anthracene	42.3	5.00	µg/L	50.0		84.5		27-133	8.00		66	
Benzidine	17.3	20.0	µg/L	50.0		**34.6**	*	40-140	**82.9**	*	30	L-04, R-05, V-05, V-35
Benzo(g,h,i)perylene	33.9	5.00	µg/L	50.0		67.9		10-219	8.22		97	
4-Bromophenylphenylether	37.7	10.0	µg/L	50.0		75.4		53-127	8.11		43	
Butylbenzylphthalate	42.1	10.0	µg/L	50.0		84.2		10-152	3.43		60	
4-Chloro-3-methylphenol	41.7	10.0	µg/L	50.0		83.5		22-147	8.47		73	
Bis(2-chloroethyl)ether	36.6	10.0	µg/L	50.0		73.2		12-158	13.6		108	
Bis(2-chloroisopropyl)ether	45.8	10.0	µg/L	50.0		91.5		36-166	14.4		76	
2-Chloronaphthalene	34.3	10.0	µg/L	50.0		68.6		60-120	6.90		24	
2-Chlorophenol	35.7	10.0	µg/L	50.0		71.3		23-134	14.9		61	
4-Chlorophenylphenylether	38.6	10.0	µg/L	50.0		77.2		25-158	5.79		61	
Di-n-butylphthalate	42.1	10.0	µg/L	50.0		84.2		10-120	3.58		47	
1,3-Dichlorobenzene	28.6	5.00	µg/L	50.0		57.2		10-172	14.1		30	
1,4-Dichlorobenzene	29.2	5.00	µg/L	50.0		58.4		20-124	14.3		30	
1,2-Dichlorobenzene	30.2	5.00	µg/L	50.0		60.5		32-129	15.7		30	
3,3-Dichlorobenzidine	44.9	10.0	µg/L	50.0		89.8		10-262	6.22		108	
2,4-Dichlorophenol	40.7	10.0	µg/L	50.0		81.4		39-135	12.0		50	
Diethylphthalate	39.6	10.0	µg/L	50.0		79.3		10-120	2.12		100	
2,4-Dimethylphenol	36.1	10.0	µg/L	50.0		72.2		32-120	2.18		58	
Dimethylphthalate	39.8	10.0	µg/L	50.0		79.7		10-120	3.34		183	
4,6-Dinitro-2-methylphenol	42.5	10.0	µg/L	50.0		85.0		10-181	6.71		203	
2,4-Dinitrophenol	43.2	10.0	µg/L	50.0		86.4		10-191	4.40		132	
2,4-Dinitrotoluene	41.9	10.0	µg/L	50.0		83.8		39-139	4.09		42	
2,6-Dinitrotoluene	41.8	10.0	µg/L	50.0		83.6		50-158	4.52		48	
Di-n-octylphthalate	45.6	10.0	µg/L	50.0		91.1		4-146	3.12		69	
1,2-Diphenylhydrazine/Azobenzene	43.1	10.0	µg/L	50.0		86.2		40-140	8.44		30	
Bis(2-Ethylhexyl)phthalate	42.6	10.0	µg/L	50.0		85.2		8-158	3.46		82	
Fluoranthene	42.1	5.00	µg/L	50.0		84.1		26-137	3.90		66	
Fluorene	40.6	5.00	µg/L	50.0		81.3		59-121	4.89		38	
Hexachlorobenzene	37.2	10.0	µg/L	50.0		74.4		10-152	8.08		55	
Hexachlorobutadiene	30.6	10.0	µg/L	50.0		61.1		24-120	14.6		62	
Hexachlorocyclopentadiene	29.9	10.0	µg/L	50.0		59.8		40-140	10.3		30	
Hexachloroethane	28.3	10.0	µg/L	50.0		56.5		40-120	14.0		52	
Isophorone	43.8	10.0	µg/L	50.0		87.7		21-196	11.7		93	
Naphthalene	36.1	5.00	µg/L	50.0		72.3		21-133	12.6		65	
Nitrobenzene	37.4	10.0	µg/L	50.0		74.8		35-180	13.6		62	
2-Nitrophenol	39.8	10.0	µg/L	50.0		79.6		29-182	15.4		55	

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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 B278676 - SW-846 3510C										
LCS Dup (B278676-BSD1)				Prepared: 03/24/21 Analyzed: 03/25/21						
4-Nitrophenol	22.4	10.0	µg/L	50.0		44.9	10-132	7.88	131	
N-Nitrosodimethylamine	25.0	10.0	µg/L	50.0		50.1	40-140	17.1	30	
N-Nitrosodi-n-propylamine	40.1	10.0	µg/L	50.0		80.2	10-230	15.6	87	
2-Methylnaphthalene	42.1	5.00	µg/L	50.0		84.2	40-140	10.3	30	
Phenanthrene	41.8	5.00	µg/L	50.0		83.6	54-120	6.58	39	
2-Methylphenol	35.4	10.0	µg/L	50.0		70.7	40-140	11.0	30	
Phenol	18.5	10.0	µg/L	50.0		36.9	5-120	15.8	64	
3/4-Methylphenol	35.7	20.0	µg/L	50.0		71.4	40-140	13.7	30	
Pyrene	40.6	5.00	µg/L	50.0		81.2	52-120	2.63	49	
1,2,4-Trichlorobenzene	33.1	5.00	µg/L	50.0		66.3	44-142	14.3	50	
2,4,6-Trichlorophenol	39.0	10.0	µg/L	50.0		78.1	37-144	6.04	58	
Surrogate: 2-Fluorophenol	*106*		µg/L	200		53.2	15-110			
Surrogate: Phenol-d6	*84.7*		µg/L	200		42.4	15-110			
Surrogate: Nitrobenzene-d5	*79.9*		µg/L	100		79.9	30-130			
Surrogate: 2-Fluorobiphenyl	*85.2*		µg/L	100		85.2	30-130			
Surrogate: 2,4,6-Tribromophenol	*83.7*		µg/L	100		83.7	15-110			
Surrogate: p-Terphenyl-d14	*91.3*		µg/L	100		91.3	30-130			

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QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B278784 - SW-846 3510C										
Blank (B278784-BLK1)				Prepared: 03/25/21 Analyzed: 03/26/21						
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	µg/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	µg/L							
Surrogate: Decachlorobiphenyl	*0.943*		µg/L	1.00		94.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.816*		µg/L	1.00		81.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.910*		µg/L	1.00		91.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.856*		µg/L	1.00		85.6	30-150			
LCS (B278784-BS1)				Prepared: 03/25/21 Analyzed: 03/26/21						
Aroclor-1016	0.507	0.200	µg/L	0.500		101	50-140			
Aroclor-1016 [2C]	0.464	0.200	µg/L	0.500		92.8	50-140			
Aroclor-1260	0.480	0.200	µg/L	0.500		96.0	8-140			
Aroclor-1260 [2C]	0.437	0.200	µg/L	0.500		87.3	8-140			
Surrogate: Decachlorobiphenyl	*1.91*		µg/L	2.00		95.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.67*		µg/L	2.00		83.3	30-150			
Surrogate: Tetrachloro-m-xylene	*1.71*		µg/L	2.00		85.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.60*		µg/L	2.00		80.2	30-150			
LCS Dup (B278784-BSD1)				Prepared: 03/25/21 Analyzed: 03/26/21						
Aroclor-1016	0.512	0.200	µg/L	0.500		102	50-140	1.03		
Aroclor-1016 [2C]	0.467	0.200	µg/L	0.500		93.3	50-140	0.567		
Aroclor-1260	0.498	0.200	µg/L	0.500		99.5	8-140	3.56		
Aroclor-1260 [2C]	0.449	0.200	µg/L	0.500		89.8	8-140	2.79		
Surrogate: Decachlorobiphenyl	*1.99*		µg/L	2.00		99.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.70*		µg/L	2.00		84.9	30-150			
Surrogate: Tetrachloro-m-xylene	*1.65*		µg/L	2.00		82.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.56*		µg/L	2.00		77.9	30-150			
Matrix Spike (B278784-MS1)	**Source: 21C1128-01**			Prepared: 03/25/21 Analyzed: 03/26/21						
Aroclor-1016	0.283	0.101	µg/L	0.253	ND	112	50-140			
Aroclor-1016 [2C]	0.267	0.101	µg/L	0.253	ND	106	50-140			
Aroclor-1260	0.264	0.101	µg/L	0.253	ND	105	8-140			
Aroclor-1260 [2C]	0.242	0.101	µg/L	0.253	ND	95.8	8-140			
Surrogate: Decachlorobiphenyl	*0.705*		µg/L	1.01		69.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.616*		µg/L	1.01		61.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.942*		µg/L	1.01		93.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.887*		µg/L	1.01		87.8	30-150			

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QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B278784 - SW-846 3510C										
Matrix Spike Dup (B278784-MSD1)	**Source: 21C1128-01**			Prepared: 03/25/21 Analyzed: 03/26/21						
Aroclor-1016	0.274	0.101	µg/L	0.253	ND	109	50-140	3.01	36	
Aroclor-1016 [2C]	0.260	0.101	µg/L	0.253	ND	103	50-140	2.48	36	
Aroclor-1260	0.249	0.101	µg/L	0.253	ND	98.8	8-140	5.81	38	
Aroclor-1260 [2C]	0.229	0.101	µg/L	0.253	ND	90.5	8-140	5.65	38	
Surrogate: Decachlorobiphenyl	*0.629*		µg/L	1.01		62.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.542*		µg/L	1.01		53.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.922*		µg/L	1.01		91.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.864*		µg/L	1.01		85.5	30-150			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B278577 - EPA 245.1										
Blank (B278577-BLK1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Mercury	ND	0.00010	mg/L							
LCS (B278577-BS1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Mercury	0.00413	0.00010	mg/L	0.00400		103	85-115			
LCS Dup (B278577-BSD1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Mercury	0.00414	0.00010	mg/L	0.00400		103	85-115	0.156	20	
Batch B278639 - EPA 200.8										
Blank (B278639-BLK1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Antimony	ND	1.0	µg/L							
Arsenic	ND	0.80	µg/L							
Cadmium	ND	0.20	µg/L							
Chromium	ND	1.0	µg/L							
Copper	ND	1.0	µg/L							
Lead	ND	0.50	µg/L							
Nickel	ND	5.0	µg/L							
Selenium	ND	5.0	µg/L							
Silver	ND	0.20	µg/L							
Zinc	ND	10	µg/L							
LCS (B278639-BS1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Antimony	479	10	µg/L	500		95.9	85-115			
Arsenic	485	8.0	µg/L	500		96.9	85-115			
Cadmium	470	2.0	µg/L	500		93.9	85-115			
Chromium	466	10	µg/L	500		93.3	85-115			
Copper	970	10	µg/L	1000		97.0	85-115			
Lead	464	5.0	µg/L	500		92.9	85-115			
Nickel	474	50	µg/L	500		94.8	85-115			
Selenium	472	50	µg/L	500		94.4	85-115			
Silver	471	2.0	µg/L	500		94.2	85-115			
Zinc	956	100	µg/L	1000		95.6	85-115			
LCS Dup (B278639-BSD1)				Prepared: 03/23/21 Analyzed: 03/24/21						
Antimony	469	10	µg/L	500		93.8	85-115	2.18	20	
Arsenic	474	8.0	µg/L	500		94.7	85-115	2.27	20	
Cadmium	460	2.0	µg/L	500		92.1	85-115	1.98	20	
Chromium	455	10	µg/L	500		91.0	85-115	2.42	20	
Copper	952	10	µg/L	1000		95.2	85-115	1.92	20	
Lead	455	5.0	µg/L	500		90.9	85-115	2.11	20	
Nickel	465	50	µg/L	500		93.0	85-115	1.92	20	
Selenium	465	50	µg/L	500		93.0	85-115	1.40	20	
Silver	464	2.0	µg/L	500		92.8	85-115	1.56	20	
Zinc	929	100	µg/L	1000		92.9	85-115	2.82	20	

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B278718 - EPA 200.7										
Blank (B278718-BLK1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Iron	ND	0.050	mg/L							
Hardness	ND	1.4	mg/L							
LCS (B278718-BS1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Iron	4.13	0.050	mg/L	4.00		103	85-115			
Hardness	28	1.4	mg/L	26.4		104	85-115			
LCS Dup (B278718-BSD1)				Prepared: 03/24/21 Analyzed: 03/25/21						
Iron	4.13	0.050	mg/L	4.00		103	85-115	0.106	20	
Hardness	27	1.4	mg/L	26.4		103	85-115	1.22	20	

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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 B278549 - SM21-22 3500 Cr B										
Blank (B278549-BLK1)				Prepared & Analyzed: 03/22/21						
Hexavalent Chromium	ND	0.0040	mg/L							
LCS (B278549-BS1)				Prepared & Analyzed: 03/22/21						
Hexavalent Chromium	0.099	0.0040	mg/L	0.100		99.4	90-115			
LCS Dup (B278549-BSD1)				Prepared & Analyzed: 03/22/21						
Hexavalent Chromium	0.10	0.0040	mg/L	0.100		101	90-115	1.23	11	
Batch B278550 - SM21-22 4500 CL G										
Blank (B278550-BLK1)				Prepared & Analyzed: 03/22/21						
Chlorine, Residual	ND	0.020	mg/L							
LCS (B278550-BS1)				Prepared & Analyzed: 03/22/21						
Chlorine, Residual	0.58	0.020	mg/L	0.612		94.2	85.3-130			
LCS Dup (B278550-BSD1)				Prepared & Analyzed: 03/22/21						
Chlorine, Residual	0.59	0.020	mg/L	0.612		96.8	85.3-130	2.65	13.6	
Duplicate (B278550-DUP1)	**Source: 21C1128-01**			Prepared & Analyzed: 03/22/21						
Chlorine, Residual	ND	0.020	mg/L		ND			NC	29.4	
Matrix Spike (B278550-MS1)	**Source: 21C1128-01**			Prepared & Analyzed: 03/22/21						
Chlorine, Residual	0.31	0.020	mg/L	0.300	ND	102	10-169			
Batch B278555 - EPA 1664B										
Blank (B278555-BLK1)				Prepared & Analyzed: 03/23/21						
Silica Gel Treated HEM (SGT-HEM)	ND	1.4	mg/L							
LCS (B278555-BS1)				Prepared & Analyzed: 03/23/21						
Silica Gel Treated HEM (SGT-HEM)	10		mg/L	10.0		100	64-132			
Batch B278561 - SM21-22 2540D										
Blank (B278561-BLK1)				Prepared & Analyzed: 03/23/21						
Total Suspended Solids	ND	2.5	mg/L							
LCS (B278561-BS1)				Prepared & Analyzed: 03/23/21						
Total Suspended Solids	190	5.0	mg/L	200		95.0	57.4-123			

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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 B278561 - SM21-22 2540D											
Duplicate (B278561-DUP2)	**Source: 21C1128-01**			Prepared & Analyzed: 03/23/21							
Total Suspended Solids	230	5.0	mg/L		240			**5.50**	*	5	R-02
Batch B278643 - SM19-22 4500 NH3 C											
Blank (B278643-BLK1)				Prepared: 03/23/21 Analyzed: 03/24/21							
Ammonia as N	ND	0.30	mg/L								
LCS (B278643-BS1)				Prepared: 03/23/21 Analyzed: 03/24/21							
Ammonia as N	4.8	0.30	mg/L	5.00		95.2	86.9-110				
LCS Dup (B278643-BSD1)				Prepared: 03/23/21 Analyzed: 03/24/21							
Ammonia as N	4.8	0.30	mg/L	5.00		95.2	86.9-110	0.00		9.37	
Batch B278965 - EPA 300.0											
Blank (B278965-BLK1)				Prepared & Analyzed: 03/29/21							
Chloride	ND	1.0	mg/L								
LCS (B278965-BS1)				Prepared & Analyzed: 03/29/21							
Chloride	9.2	1.0	mg/L	10.0		91.5	90-110				
LCS Dup (B278965-BSD1)				Prepared & Analyzed: 03/29/21							
Chloride	9.2	1.0	mg/L	10.0		92.5	90-110	0.990		20	

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QUALITY CONTROL

Drinking Water Organics EPA 504.1 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B278913 - EPA 504 water										
Blank (B278913-BLK1)				Prepared & Analyzed: 03/26/21						
1,2-Dibromoethane (EDB)	ND	0.021	µg/L							
Surrogate: 1,3-Dibromopropane	*0.982*		µg/L	1.05		93.6	70-130			
LCS (B278913-BS1)				Prepared & Analyzed: 03/26/21						
1,2-Dibromoethane (EDB)	0.213	0.021	µg/L	0.262		81.2	70-130			
Surrogate: 1,3-Dibromopropane	*1.08*		µg/L	1.05		103	70-130			
LCS Dup (B278913-BSD1)				Prepared & Analyzed: 03/26/21						
1,2-Dibromoethane (EDB)	0.224	0.020	µg/L	0.256		87.6	70-130	5.34		
Surrogate: 1,3-Dibromopropane	*1.05*		µg/L	1.02		102	70-130			
Matrix Spike (B278913-MS1)	**Source: 21C1128-01**			Prepared & Analyzed: 03/26/21						
1,2-Dibromoethane (EDB)	0.208	0.020	µg/L	0.245	ND	84.8	65-135			
Surrogate: 1,3-Dibromopropane	*1.00*		µg/L	0.980		102	70-130			

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS

Lab Sample ID: B278784-BS1

Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): ECD4

Instrument ID (2): ECD4

GC Column (1): ID: (mm)

GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.507	
	2	0.000	0.000	0.000	0.464	9.5
Aroclor-1260	1	0.000	0.000	0.000	0.480	
	2	0.000	0.000	0.000	0.437	9.4

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

LCS Dup

Lab Sample ID: B278784-BSD1 Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.512	
	2	0.000	0.000	0.000	0.467	8.8
Aroclor-1260	1	0.000	0.000	0.000	0.498	
	2	0.000	0.000	0.000	0.449	10.7

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

Matrix Spike

Lab Sample ID: B278784-MS1 Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.283	
	2	0.000	0.000	0.000	0.267	4.8
Aroclor-1260	1	0.000	0.000	0.000	0.264	
	2	0.000	0.000	0.000	0.242	7.2

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

608.3

Matrix Spike Dup

Lab Sample ID: B278784-MSD1 Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): ECD4 Instrument ID (2): ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.274	
	2	0.000	0.000	0.000	0.260	3.8
Aroclor-1260	1	0.000	0.000	0.000	0.249	
	2	0.000	0.000	0.000	0.229	8.8

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS

Lab Sample ID: B278913-BS1

Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1):

Instrument ID (2):

GC Column (1): ID: (mm)

GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
1,2-Dibromoethane (EDB)	1	3.407	0.000	0.000	0.213	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

LCS Dup

Lab Sample ID: B278913-BSD1 Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
1,2-Dibromoethane (EDB)	1	3.407	0.000	0.000	0.224	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 504.1

Matrix Spike

Lab Sample ID: B278913-MS1 Date(s) Analyzed: 03/26/2021 03/26/2021

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
1,2-Dibromoethane (EDB)	1	3.405	0.000	0.000	0.208	

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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.
H-03	Sample received after recommended holding time was exceeded.
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.
R-02	Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
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-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.
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.

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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

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CERTIFICATIONS

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

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A Pace Analytical® Laboratory

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

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
SM19-22 4500 NH3 C in Water	
Ammonia as N	NY,MA,CT,RI,VA,NC,ME
SM21-22 2540D in Water	
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

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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

Con-Test, a Pace 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	06/30/2021
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2021
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2021
ME	State of Maine	MA00100	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2021
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

con-test ANALYTICAL LABORATORY

210128

Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

Doc # 381 Rev 1_03242017

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name: Lockwood Remediation Technologies
Address: 89 Crawford Street, Leominster, MA 01453
Phone: (774) 450-7177
Project Name: 1500 Soldiers Field Road
Project Location: 1500 Soldiers Field Road, Brighton, MA
Project Number: 2-2127
Project Manager: Brian Caccavale
Con-Test Quote Name/Number:
Invoice Recipient:
Sampled By: Brian Caccavale

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date: 5-day

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☐
Other:
CLP Like Data Pkg Required: ☐
Email To: jjennings@lrt-llc.net
CC: bcaccavale@lrt-llc.net

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1] Matrix Code	Conc Code	Ammonia [4]	Chloride [4]	TRC [4]	Total Metals (Sb,As,Cd, Cr III, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn) [5]	Cyanide [4]	Voc's [6]	Semi-Vocs [6]	PCB's [7]	TPH [8]	TSS [4]	EDB [9]	Hardness [9]	Chromium VI [4]
1	Influent	3/19/21	1425		X	GW	U	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Receiving Water	3/19/21	1350		X	O	U	X			X						X		X	X

	# of Containers	[2] Preservation Code	[3] Container Code
Ammonia [4]	2	S	P
Chloride [4]	1	I	P
TRC [4]	1	I	p
Total Metals (Sb,As,Cd, Cr III, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn) [5]	2	N	P
Cyanide [4]	1	X	P
Voc's [6]	3	H	V
Semi-Vocs [6]	2	I	A
PCB's [7]	2	I	A
TPH [8]	2	S	A
TSS [4]	2	I	P
EDB [9]	3	T	V
Hardness [9]	2	N	P
Chromium VI [4]	2	I	P

ANALYSIS REQUESTED

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Comments:
pH 7.27 (Receiving water)
7.09 (Influent)

Ok to run Cr VI & TRC past hold per Brian C.
-KKM 3/23/2021

Samples are for NPDES RGP Parameters.

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] **Container Codes:**
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

dicate possible sample concentration within the Conc
ode column above:
m; L - Low; C - Clean; U - Unknown

	Date/Time:
Relinquished by: (signature)	3/19/21 1600
Received by: (signature) LRT Cooler	3/19/21 1600
Relinquished by: (signature)	Date/Time:
Received by: (signature)	3/22/21 1500
Relinquished by: (signature)	3/22/21 1455
Received by: (signature)	4.0 3/23/21 1655

Detection Limit Requirements
MA
CT
Other

Special Requirements
☐ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

con-test ANALYTICAL LABORATORY
www.contestlabs.com
NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality ☐ MWRA ☐ WRTA
☐ Federal ☐ 21 J ☐ School
☐ City ☐ Brownfield ☐ MBTA

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

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

Client LRT

Received By _____ Date 3/22/21 Time 1655

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 4.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? n/a Were Samples Tampered with? n/a

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name _____

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? David

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? Acid T Base T

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	6	1 Liter Plastic	2	16 oz Amb.	
HCL-	3	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	11	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-	3	SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

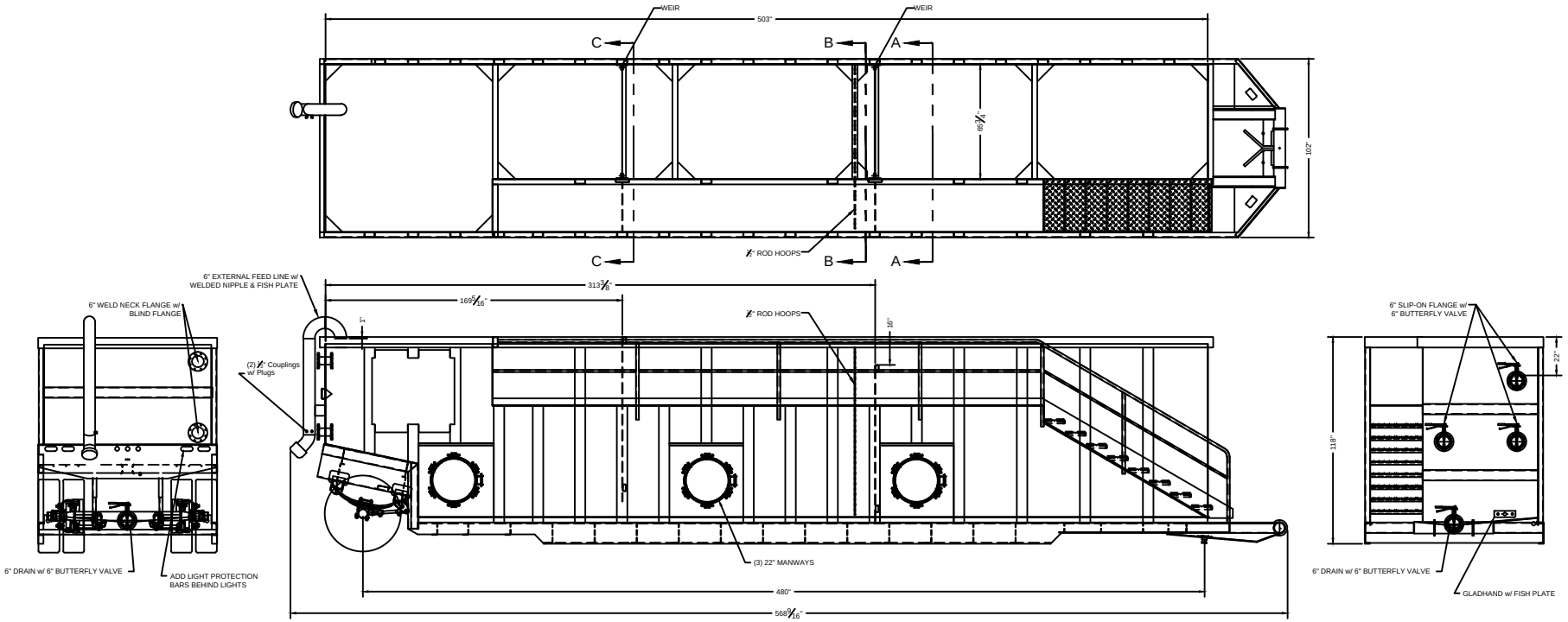
Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

Hex chrome past hold.
TRC past hold.

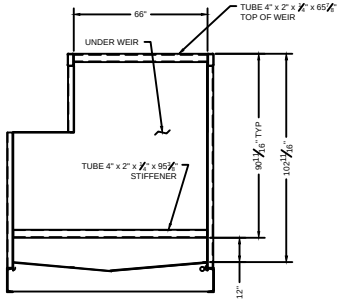
Appendix C

Cutsheets

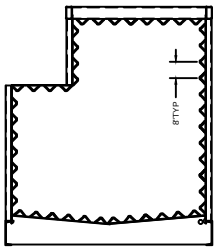


STANDARD SPECIFICATION

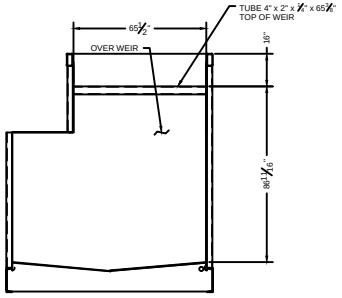
CAPACITY: .... 18,480 GALLONS (440 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE
SUSPENSION: .... 3 LEAF SPRING, 22,500 LBS. CACPACITY
AXLE: .... 77.5" TRACK, 22,500 LBS. CAPACITY
TIRES: .... 11R22.5 RADIAL
WHEELS: .... 8.25 x 22.5 STEEL
MANWAYS: .... 3 - 22" DIA. CURB SIDE
VALVES: .... 3 - 6" BUTTERFLY VALVE (FRONT)
1 - 6" DRAIN BUTTERFLY VALVE (FRONT)
1 - 6" DRAIN BUTTERFLY VALVE (REAR)
2 - 6" BLIND FLANGE CONNECTION (REAR)
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) FINISH COAT POLURETHANE 4.0 TO 5.0 D.F.T.



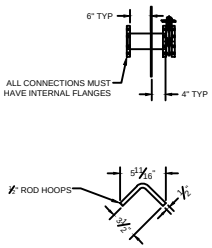
SECTION VIEW "C-C"



SECTION VIEW "B-B"



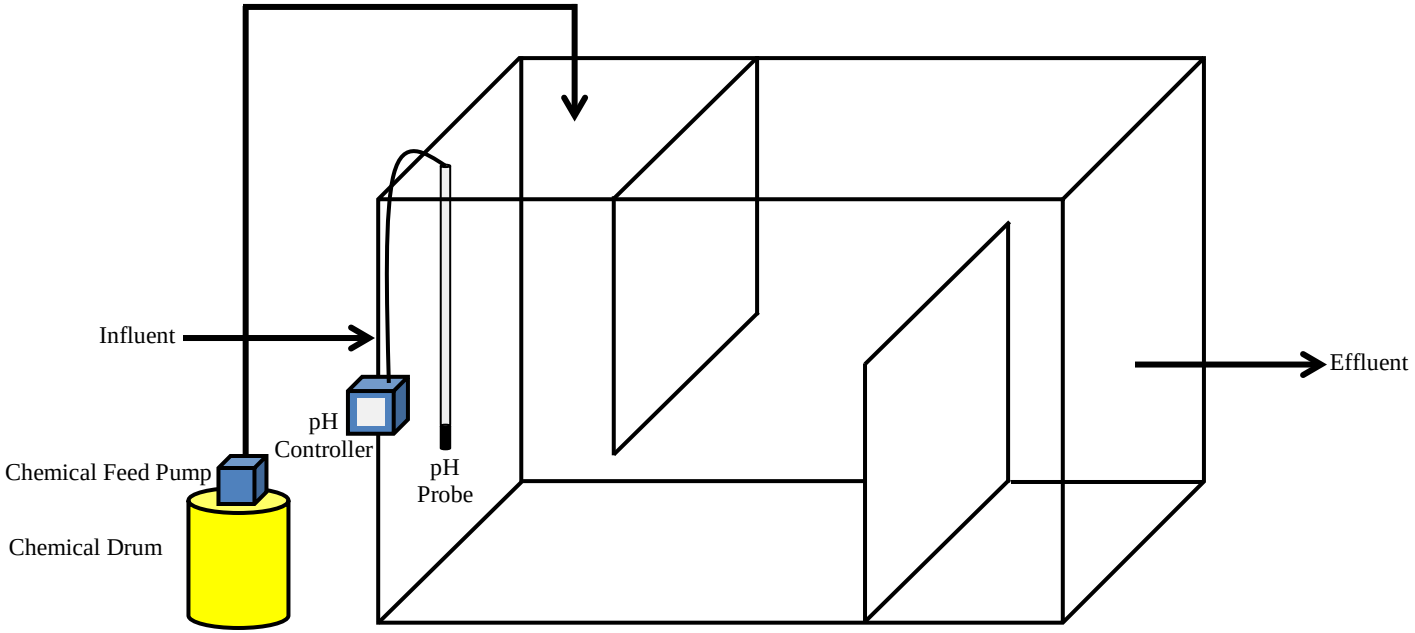
SECTION VIEW "A-A"



18,000 Gal. Weir Tank

Lockwood Remediation Technologies, LLC

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



Notes:

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

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

Configuration of pH Adjustment System

One Controller for the Broadest Range of Sensors.

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

Maximum Versatility

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

Ease of Use and Confidence in Results

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

Wide Variety of Communication Options

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

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

Controller Comparison

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

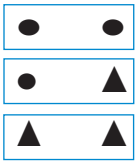
Choose from Hach's Broad Range of Digital and Analog Sensors

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

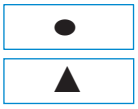
● = Digital ▲ = Analog

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

2 Channel Configurations



1 Channel Configurations



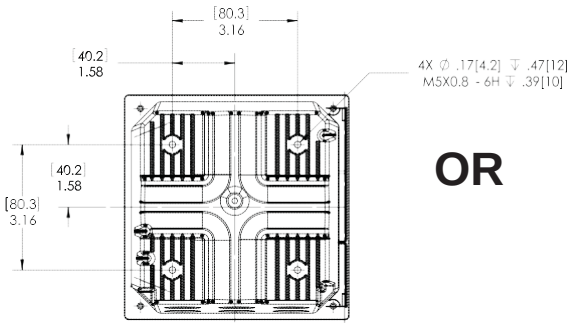
Specifications*

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

**Subject to change without notice.*

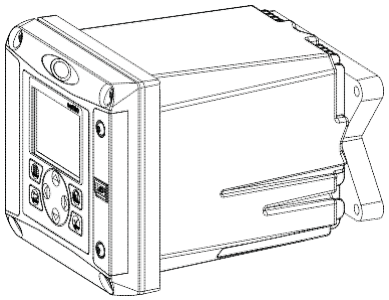
Dimensions

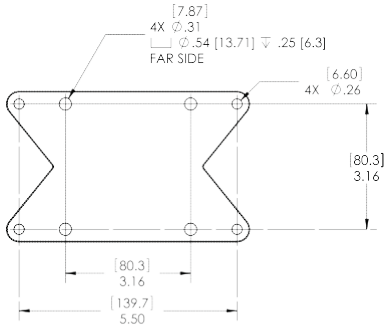
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

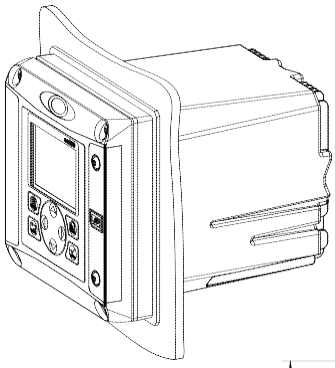
OR

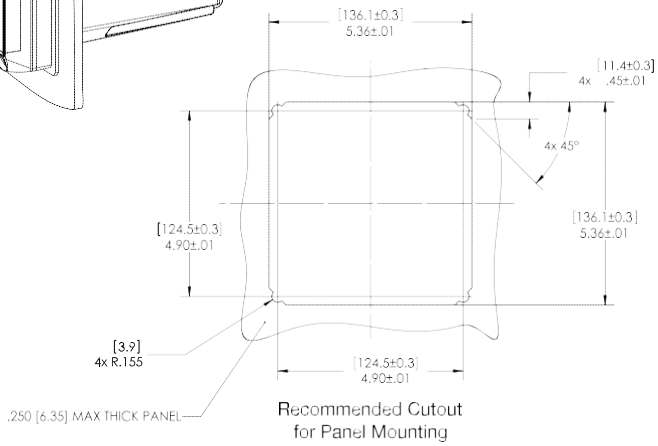




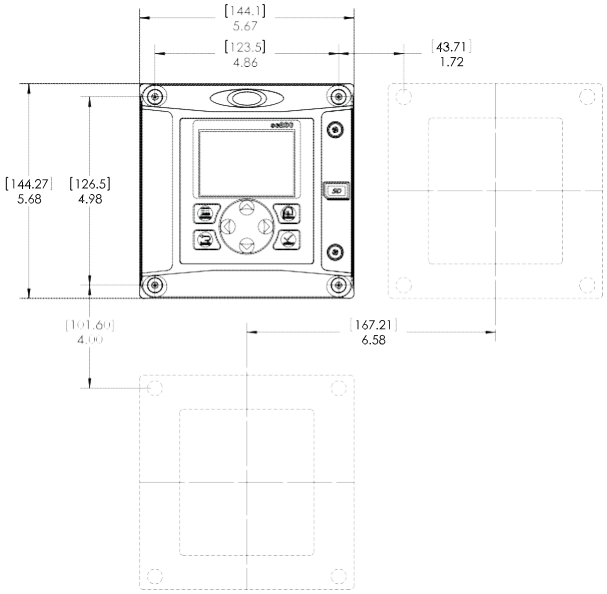
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield
p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



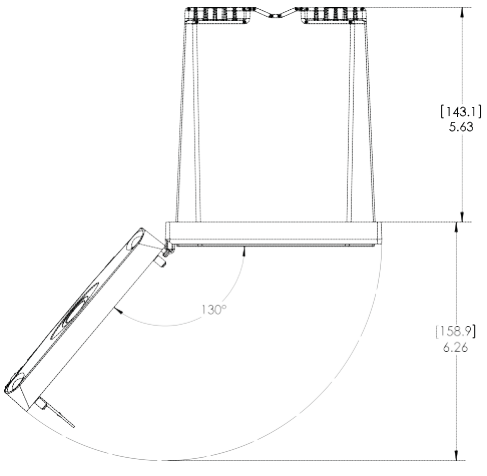


Recommended Cutout
for Panel Mounting

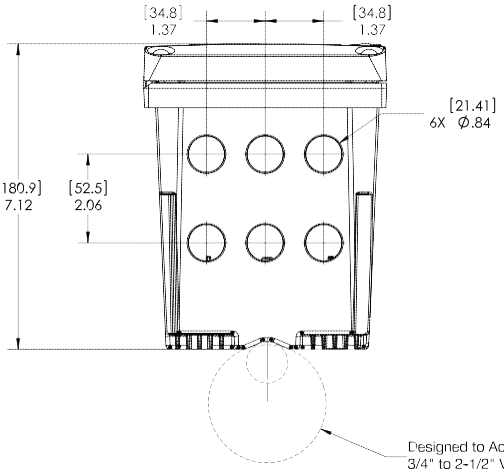


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



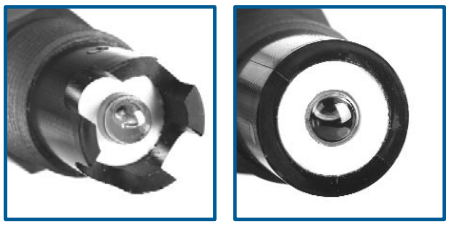
Door Opening Details



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

3/4-inch Combination pH and ORP Sensor Kits

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



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

Features and Benefits

Low Price—High Performance

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

Special Electrode Configurations

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

Temperature Compensation Element Option

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

Versatile Mounting Styles

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

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

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

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

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

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

Specifications*

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

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

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

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

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

Warranty
90 days

**Specifications subject to change without notice.*

Engineering Specifications

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

Dimensions

Convertible Style Sensor

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

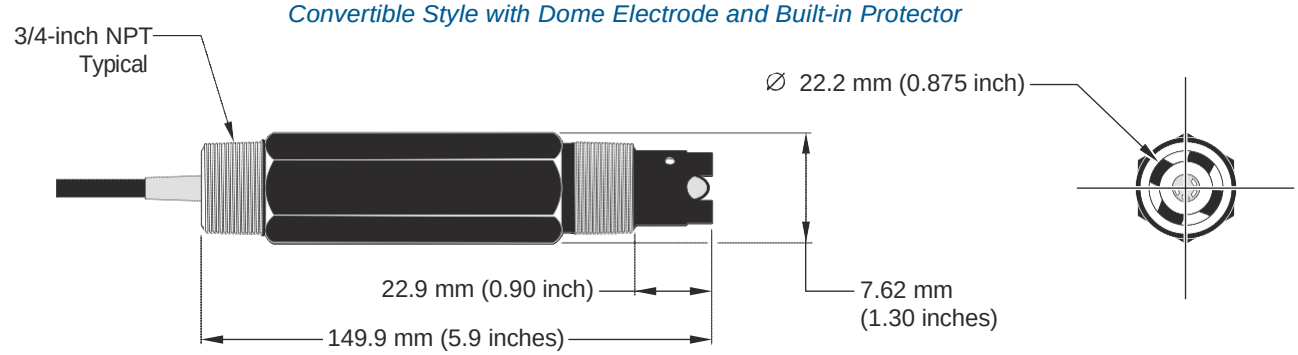
Insertion Style Sensor

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

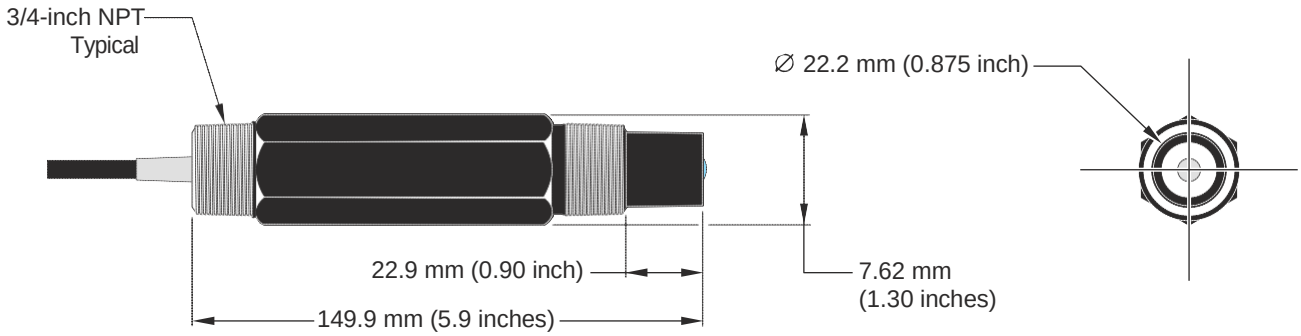
Sanitary Style Sensor

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

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



Lockwood Remediation Technologies, LLC

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

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

Features

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

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

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

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

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

Operating Benefits

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

Aftermarket

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

Series A Plus
Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

MODEL			LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4	LBS2	LBS3	LBS4
Capacity nominal (max.)		GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00	0.50	1.38	2.42
		GPO	6	6	10	12	24	30	48	12	33	58
		LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6	1.9	5.2	9.14
Pressure[3] (max.)	GFPP, PVDF, 316SS or PVC <;N code) wITFE Seats)	PSIG (Bar)	250 (17)	150 (10)	250 (17)	150 (10)	100 (7)	100 (7)	50 (3.3)	250 (17)	150 (10)	100 (7)
	PVC (V code) Viton or CSPE Seats IDegas Liquid End		150 (10)							150 (10)		
Connections:		Tubina	1.14" ID X 3.8" OD						3.8" D X 1.2" OD	1.14" D X 3.8" OD		
		Pioina	1.14" FNPT									
Strokes/Minute		SPM	125							250		

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

Engineering Data

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

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

Engineering Data

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

Custom Engineered Designs - Pre-Engineered Systems

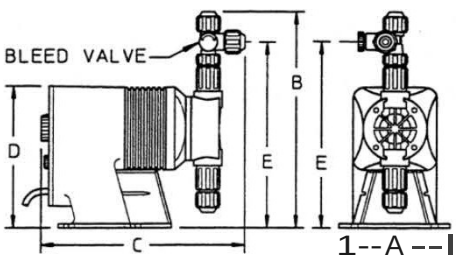
Pre-Engineered Systems

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

Dimensions

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

NOTE: Inches X 2.54 cm



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

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

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

A95OVER Specifications

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

Metric Equivalent Specifications

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

A95OVER Technical Information

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

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

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

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

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

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

Features

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

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Operating Benefits

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

Aftermarket

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

Series HV

Specifications and Model Selection

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

Engineering Data

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

Diaphragm: PTFE-faced CSPE-backed

Check Valves Materials Available:

Seats/O-Rings: PTFE, CSPE, Viton

Balls: Ceramic, PTFE, 316 SS, Alloy C

Fittings Materials Available: GFPPL, PVC, PVDF

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

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

Tubing: Clear PVC, White PE

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

Engineering Data

Reproducibility: +/- 2% at maximum capacity

Viscosity Max CPS: 20,000 CPS

Stroke Frequency Max SPM: 125

Stroke Frequency Turn-Down Ratio: 10:1

Stroke Length Turn-Down Ratio: 10:1

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

Average Current Draw:

@ 115 VAC; Amps: 1.0 Amps

@ 230 VAC; Amps: 0.5 Amps @ 230 VAC

Peak Input Power: 300 Watts

Average Input Power @ Max SPM: 130 Watts

Custom Engineered Designs – Pre-Engineered Systems

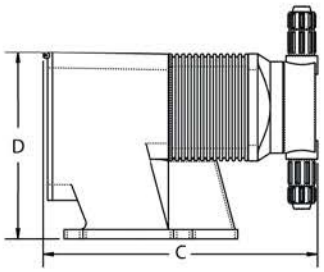
Pre-Engineered Systems

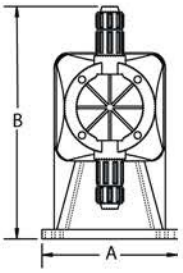
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key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

Dimensions

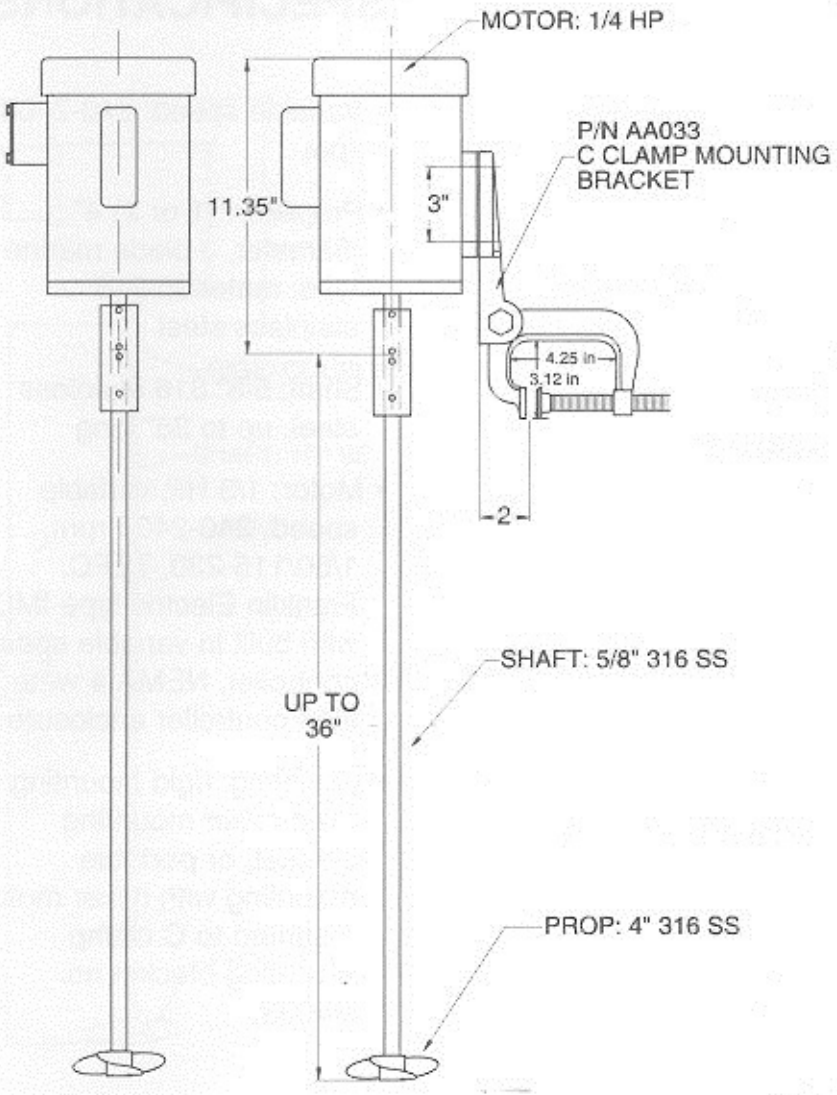
Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

NOTE: Inches X 2.54 = cm





MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

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

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

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

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

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

Precautionary Statements - Response

Absorb spillage to prevent material damage.

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

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

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

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

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

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

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

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

Acute Toxicity

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

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

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

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

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

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

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

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

SECTION 15) REGULATORY INFORMATION

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

SECTION 16) OTHER INFORMATION

Glossary

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

Additional Information

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

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

DISCLAIMER

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

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 Properties

Density	6.26 lb/gal
Specific Gravity	0.6 - 0.9
Appearance	granular, white solid
pH	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

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.

Borden & Remington Corp
63 Water St. PO Box 2573
Fall River, MA, USA, 02722
Telephone: (508) 675 0096

SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label

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

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

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

Chemical family : Inorganic acid

Name, address, and telephone number of the supplier:

Borden & Remington Corp

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

Supplier's Telephone # : 508-675-0096

Name, address, and telephone number of the manufacturer:

Refer to supplier

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

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear, colorless liquid.

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

Hazard classification:

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

Label elements

Hazard pictogram(s)

Signal Word

DANGER!

Hazard statement(s)

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

SAFETY DATA SHEET

Precautionary statement(s)

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

If swallowed: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Absorb spillage to prevent material damage.

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

Dispose of contents/container in accordance with local regulation.

Other hazards

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance;solution

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

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

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

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

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

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

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63 Water St. PO Box 2573
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Telephone: (508) 675 0096

SAFETY DATA SHEET

Most important symptoms and effects, both acute and delayed

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

Indication of any immediate medical attention and special treatment needed

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

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

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

Unsuitable extinguishing media

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

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

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

Flammability classification (OSHA 29 CFR 1910.106)

: Not flammable.

Hazardous combustion products

: Sodium oxides.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

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

Special fire-fighting procedures

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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

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

Methods and material for containment and cleaning up

SAFETY DATA SHEET

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

Special spill response procedures

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

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

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

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

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

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

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

Exposure controls

Ventilation and engineering measures

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

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

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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

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

SECTION 10. STABILITY AND REACTIVITY

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

Chemical stability : Material is stable under normal conditions.

Possibility of hazardous reactions
: Hazardous polymerization does not occur.

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

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

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

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES

Routes of entry Ingestion : YES

Routes of exposure skin absorption
: NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

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

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

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

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

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

Mutagenicity : Not expected to be mutagenic in humans.

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

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

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

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

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

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

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

Synergistic materials : Not available.

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

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

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

SECTION 12. ECOLOGICAL INFORMATION

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

Ecotoxicity data:

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

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

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

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

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

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

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

Other Adverse Environmental effects
: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

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

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

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

SECTION 14. TRANSPORTATION INFORMATION

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

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

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

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

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

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

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

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

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

Canadian Information:

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

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

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International Information:

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

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

SECTION 16. OTHER INFORMATION

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

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

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

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Other special considerations for handling

: Provide adequate information, instruction and training for operators.

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

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

NFPA Rating

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

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

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

DISCLAIMER

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

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

END OF DOCUMENT

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SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Sulfuric Acid 71-100%**

Product Code(s) : Not available.

Recommended use of the chemical and restrictions on use

: Reagent ;Chemical intermediate.
Use pattern: Professional Use Only
Recommended restrictions: None known.

Chemical family : Inorganic acid

Name, address, and telephone number of the supplier:

Borden & Remington Corp

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

Supplier's Telephone # : 508-675-0096

Name, address, and telephone number of the manufacturer:

Refer to supplier

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

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear to cloudy liquid. Odorless.

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

Hazard classification :

Corrosive to metals: Category 1
Acute toxicity, inhalation - Category 2 (mist)
Eye damage/irritation: Category 1
Skin corrosion/irritation: Category 1
Specific Target Organ Toxicity, Single Exposure -Category 3 (respiratory)

Label elements

Hazard pictogram(s)

Signal Word

DANGER!

Hazard statement(s)

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

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Precautionary statement(s)

Keep only in original container.
Wash thoroughly after handling.
Do not breathe mists.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/clothing and eye/face protection.
[In case of inadequate ventilation] wear respiratory protection.

If swallowed: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Absorb spillage to prevent material damage.

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

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards

Other hazards which do not result in classification:

Ingestion may cause severe irritation to the mouth, throat and stomach.Contact with metals may release small amounts of flammable hydrogen gas.Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin.Prolonged or repeated inhalation of fumes or vapours, may cause chronic lung effects, such as bronchitis, and tooth enamel erosion. Chronic skin contact with low concentrations may cause dermatitis.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance

Chemical name	Common name and synonyms	CAS #	Concentration
Sulfuric acid	Battery acid; Hydrogen sulfate; Oil of vitriol	7664-93-9	**71.0 - 100.0**
Water	H2O	7732-18-5	**Balance**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

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

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

Skin contact : Take off all contaminated clothing immediately. Immediately flush skin with gently flowing, running water for at least 20 minutes. Do not rub area of contact. Cover wound with sterile dressing. Seek immediate medical attention/advice. Wash contaminated clothing before reuse. Leather and shoes that have been contaminated with the solution may need to be destroyed.

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Eye contact : Immediately flush eyes with running water for at least 20 minutes. Protect unharmed eye. Seek immediate medical attention/advice.

Most important symptoms and effects, both acute and delayed

: May cause serious eye irritation or damage. Symptoms may include redness, pain, tearing and conjunctivitis. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring. May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death. May cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Prolonged or repeated inhalation of fumes or vapours, may cause chronic lung effects, such as bronchitis, and tooth enamel erosion.

Indication of any immediate medical attention and special treatment needed

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

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water with caution. Contact with water will generate considerable heat.

Unsuitable extinguishing media

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

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

: Not considered flammable. Burning produces obnoxious and toxic fumes. Contact with metals may release small amounts of flammable hydrogen gas. Reacts violently with a wide variety of organic and inorganic chemicals including alcohol, carbides, chlorates, picrates, nitrates and metals. Contact with water will generate considerable heat.

Flammability classification (OSHA 29 CFR 1910.106)

: Non-flammable.

Hazardous combustion products

: Sulphur oxides. Carbon dioxide and carbon monoxide. Oxygen.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

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

Special fire-fighting procedures

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. A full-body chemical resistant suit should be worn. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Dike for water control. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions : Do not allow material to contaminate ground water system. For large spills, dike the area to prevent spreading.

Methods and material for containment and cleaning up

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: Remove all sources of ignition. Ventilate area of release. Stop spill or leak at source if safely possible. Dike for water control. Neutralize with sodium bicarbonate or a mixture of soda ash/slaked lime. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Contact the proper local authorities.

Special spill response procedures

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

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Use in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. See Section 8 for additional personal protection advice when handling this product. Do not ingest. Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and flame. Keep away from bases, metals and other incompatibles. Keep container tightly closed when not in use. Keep only in original container. Wash thoroughly after handling. During preparation or dilution, always add liquid slowly to water and with constant stirring.

Conditions for safe storage : Store in a cool, dry, well-ventilated area. Store locked up. Store away from incompatibles and out of direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Store in corrosion-resistant containers. Keep only in original container.

Incompatible materials : Strong oxidizing agents;Metals (e.g. Aluminum, brass, copper); Alkalies; Aldehydes ; Reducing agents; Water; Organic materials; Acids Chlorate . .

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
Sulfuric acid	0.2 mg/m³ (thoracic fraction)	N/Av	1 mg/m³	N/Av
Water	N/Av	N/Av	N/Av	N/Av

Exposure controls

Ventilation and engineering measures

: Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. Confirmation of which type of respirator is most suitable for the intended application should be obtained from respiratory protection suppliers. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

Skin protection : Wear chemically protective gloves (impervious), boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear impervious gloves, such as butyl rubber. Unsuitable material: polyvinyl alcohol. Advice should be sought from glove suppliers.

Eye / face protection : Chemical splash goggles must be worn when handling this material. A full face shield may also be necessary.

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Other protective equipment	:	Other equipment may be required depending on workplace standards. An eyewash station and safety shower should be made available in the immediate working area.
General hygiene considerations	:	Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove and wash contaminated clothing before re-use. Do not take contaminated clothing home.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear, oily, colourless liquid
Odour	:	Odorless.
Odour threshold	:	N/Av
pH	:	<1.0
Melting/Freezing point	:	-40°C (-40°F)
Initial boiling point and boiling range	:	102°C (215.6°F)
Flash point	:	Not applicable.
Flashpoint (Method)	:	Not applicable.
Evaporation rate (BuAe = 1)	:	Slower than ether.
Flammability (solid, gas)	:	Not applicable.
Lower flammable limit (% by vol.)	:	Not applicable.
Upper flammable limit (% by vol.)	:	Not applicable.
Oxidizing properties	:	None known.
Explosive properties	:	Not explosive
Vapour pressure	:	<0.3 mmHg @75°F
Vapour density	:	3.4
Relative density / Specific gravity	:	1.84
Solubility in water	:	Soluble
Other solubility(ies)	:	None known.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution	:	N/Av
Auto-ignition temperature	:	N/Ap
Decomposition temperature	:	Not available.
Viscosity	:	N/Av
Volatiles (% by weight)	:	Not available.
Volatile organic Compounds (VOC's)	:	Not available.
Absolute pressure of container	:	N/Ap
Flame projection length	:	N/Ap
Other physical/chemical comments	:	None.

SECTION 10. STABILITY AND REACTIVITY

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Reactivity	:	Contact with metals may release small amounts of flammable hydrogen gas. Corrosive in contact with metals Avoid contact with incompatible materials. Contact with water will generate considerable heat. Reacts vigorously, violently or explosively with many organic and inorganic chemicals, such as strong acids, acid chlorides, acid anhydrides, ketones, glycols, and organic peroxides.
Chemical stability	:	Stable under the recommended storage and handling conditions prescribed.
Possibility of hazardous reactions	:	Hazardous polymerization does not occur. Contact with metals may release small amounts of flammable hydrogen gas.
Conditions to avoid	:	Avoid heat and open flame. Ensure adequate ventilation, especially in confined areas. Avoid contact with incompatible materials.
Incompatible materials	:	Strong oxidizing agents;Metals (e.g. Aluminum, brass, copper); Alkalies; Aldehydes ; Reducing agents; Water; Organic materials; Acids Chlorate . .
Hazardous decomposition products	:	Decomposes at 340 deg C into sulfur trioxide and water.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation	:	YES
Routes of entry skin & eye	:	YES
Routes of entry Ingestion	:	YES
Routes of exposure skin absorption	:	NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation	:	Fatal if inhaled. Inhalation of high concentrations of fumes or mists may cause severe irritation and corrosive damage to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.
Sign and symptoms ingestion	:	May be harmful if swallowed. May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.
Sign and symptoms skin	:	This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification: Skin corrosion/irritation: Category 1 Causes severe skin burns and eye damage. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.
Sign and symptoms eyes	:	This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification: Eye damage/irritation: Category 1 Causes serious eye damage. Symptoms may include severe pain, tearing, redness, swelling and blurred vision. Contact may lead to permanent injury and blindness.
Potential Chronic Health Effects	:	Chronic skin contact with low concentrations may cause dermatitis. Prolonged or repeated inhalation of fumes or vapours, may cause chronic lung effects, such as bronchitis, and tooth enamel erosion.
Mutagenicity	:	Not expected to be mutagenic in humans.

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Carcinogenicity : This material is not classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Strong inorganic acid mist containing sulfuric acid is classified as a Group 1 Human Carcinogen by the IARC. However, this classification does not apply to liquid forms of sulfuric acid.

Reproductive effects & Teratogenicity

: Not expected to cause reproductive effects.

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

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

This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification:
Specific target organ toxicity, single exposure -Category 3
May cause respiratory irritation.

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

Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

Synergistic materials : Not available.

Toxicological data : See below for toxicological data on the substance.
The calculated ATE values for this mixture are:
ATE inhalation (mists) = 0.5 mg/L (75%)

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
Sulfuric acid	0.375mg/L	2140 mg/kg	N/Av
Water	N/Av	>90 mL/kg	N/Av

Other important toxicological hazards

: None known or reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Sulfuric acid	7664-93-9	N/Av	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

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Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Sulfuric acid	7664-93-9	N/Av	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Sulfuric acid	7664-93-9	>100mg/L(Green algae)	N/Av	None.
Water	7732-18-5	No information available.	No information available.	Not applicable.

Persistence and degradability

: Biodegradation is not applicable to inorganic materials.

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

Components	Partition coefficent n-octanol/ater (log Kow)	Bioconcentration factor (BCF)
Sulfuric acid (CAS 7664-93-9)	N/Ap	no bioaccumulation
Water (CAS 7732-18-5)	N/Ap	N/Ap

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

Other Adverse Environmental effects

: No additional information.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

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

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

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	UN1830	SULFURIC ACID ; or SULPHURIC ACID	8	II	
49CFR/DOT Additional information	May be shipped as a limited quantity in receptacles not exceeding 1.0 Liters, according to 49 CFR 173.154.				
TDG	UN1830	SULPHURIC ACID	8	II	

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TDG Additional information	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass.				
ICAO/IATA	UN1830	Sulphuric acid	8	II	
ICAO/IATA Additional information	Refer to ICAO/IATA Packing Instruction				
IMDG	UN1830	SULFURIC ACID or SULPHURIC ACID	8	II	
IMDG Additional information	May be shipped as a limited quantity. Consult the IMDG regulations for more information.				

Special precautions for user : None known.

Environmental hazards : See ECOLOGICAL INFORMATION, Section 12.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not applicable.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

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

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Sulfuric acid	7664-93-9	Yes	1000 lb/ 454 kg	1000 lb TPQ	Yes	1%
Water	7732-18-5	Yes	N/Ap	N/Av	No	N/Ap

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Acute Health Hazard. Chronic Health Hazard

Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Sulfuric acid	7664-93-9	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Water	7732-18-5	No	N/Ap	No	No	No	No	No	No

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Canadian Information:

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

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

International Information:

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

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Sulfuric acid	7664-93-9	231-639-5	Present	Present	(1)-724; (1)-430	KE-32570	Present	HSR001572, HSR001573, HSR001588 (dilution)
Water	7732-18-5	231-791-2	Present	Listed	Listed	KE-35400	Present	Listed

SECTION 16. OTHER INFORMATION

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

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References : Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2015 (Chempendium, RTECs, HSDB, INCHEM).
European Chemicals Agency, Classification Legislation, 2015
Material Safety Data Sheet from manufacturer
OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2015

Preparation Date (mm/dd/yyyy)

: 10/13/2015

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

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

Health: 3 *Flammability:* 0 *Reactivity:* 2

NFPA Rating

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

: *Health:* 3 *Flammability:* 0 *Instability:* 2 *Special Hazards:* None.

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

DISCLAIMER

This Safety Data Sheet was prepared by ICC The Compliance Center Inc using information provided by / obtained from Borden & Remington Corp and CCOHS' Web Information Service. The information in the Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Borden & Remington Corp .expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.
This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc and Borden & Remington Corp.

END OF DOCUMENT

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

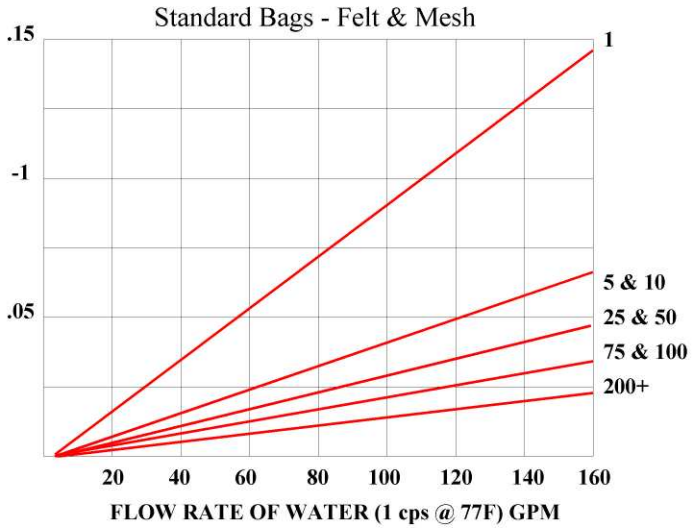
Optional Filter Media

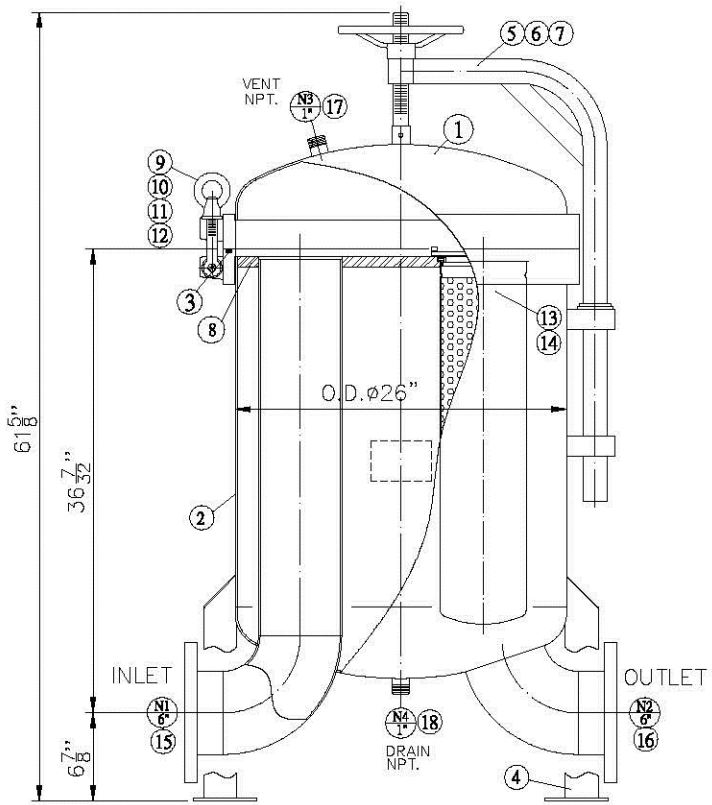
Felt: Nomex, Polyester, Polypropylene

Monofilament: Nylon, Polyester, Polypropylene

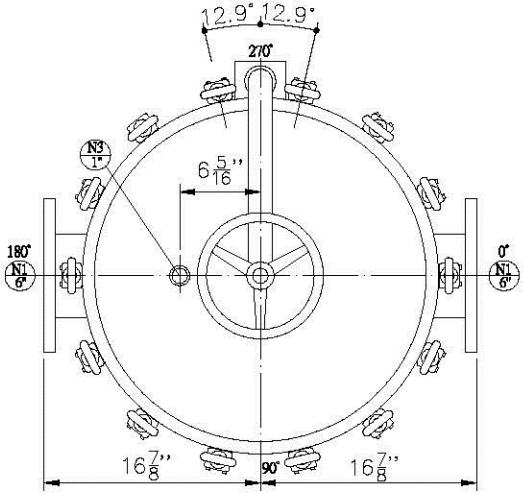
Multifilament: Nylon, Polyester

Polypropylene: Oil Removal

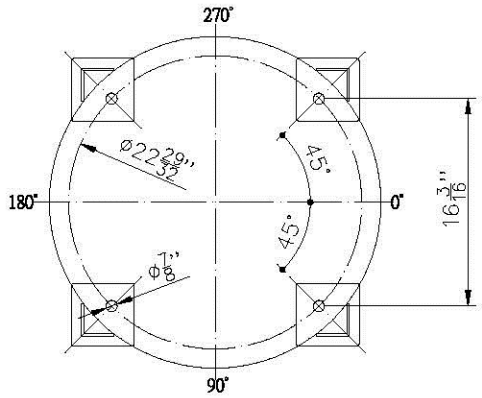




SIDE VIEW



TOP VIEW



ANCHOR

BILL OF MATERIALS
(QUANTITY PER UNIT)

PROD ORDER_____S.O_____ MFG. SERIAL NO._____

CUSTOMER_____ DESIGN __150__ PSIG __90__ °C

DESTINATION_____ MAX. A.W.P._150__ PSIG __90__ °C

CUST. P.O._____ HYDROSTATIC TESTED _225_ PSIG

CUST.EQUIP_____ CODE _____

CODE STAMP_____ N.B._____

NO OF UNITS _____ SCH SHIP DATE _____

WEIGHT EMPTY _____ KG. FULL _____ KG

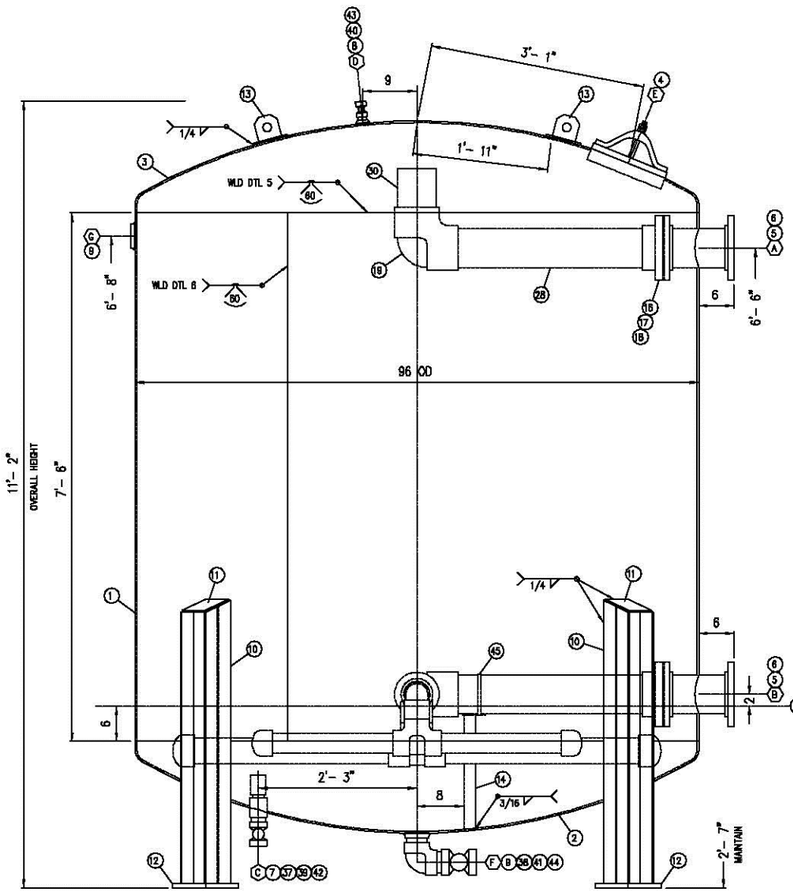
NO.	DESCRIPTION	MATERIAL	UNIT	QUAN.	PART NO.
1	FILTER COVER	304		1	
2	FILTER SHELL	304		1	
3	GASKET	EPDM		1	
4	LEG WELDMENT	304		4	
5	DAVIT HANDWHEEL	304		1	
6	DAVIT SCREW	304		1	
7	DAVIT ARM	304		1	
8	SEPARATE PLATE	304		1	
9	EYENUT	304		14	
10	WASHER	304		14	
11	EYEBOLT	304		14	
12	BOLT SUPPORT	304		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	
17	VENT NPT 1"	304		1	
18	DRAIN NPT 1"	304		1	

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA

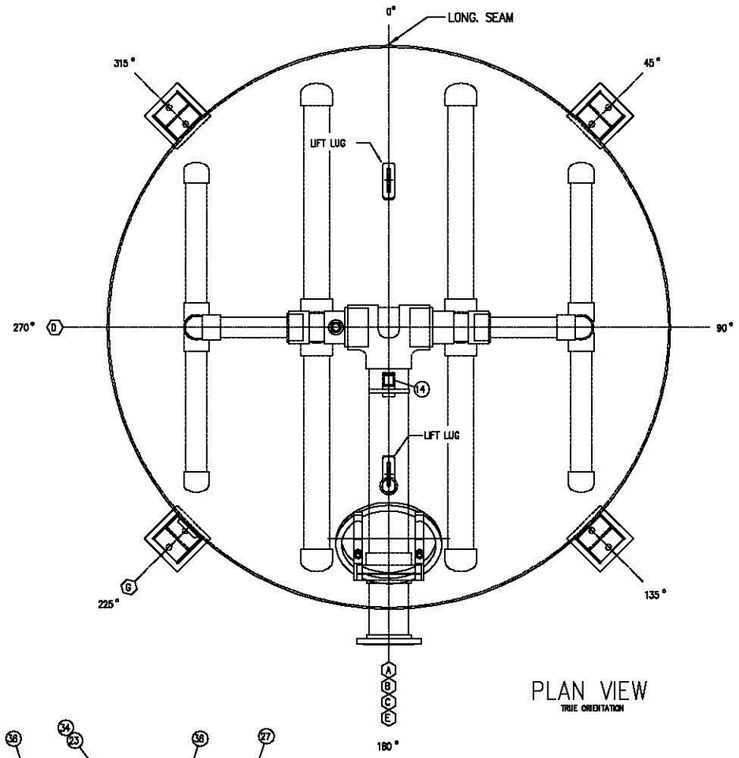
NAME	REV: A
Multi-Bag Filter Vessel	SCALE: NONE

PROJECT NO.	ORDER NO.	ITEM NO.

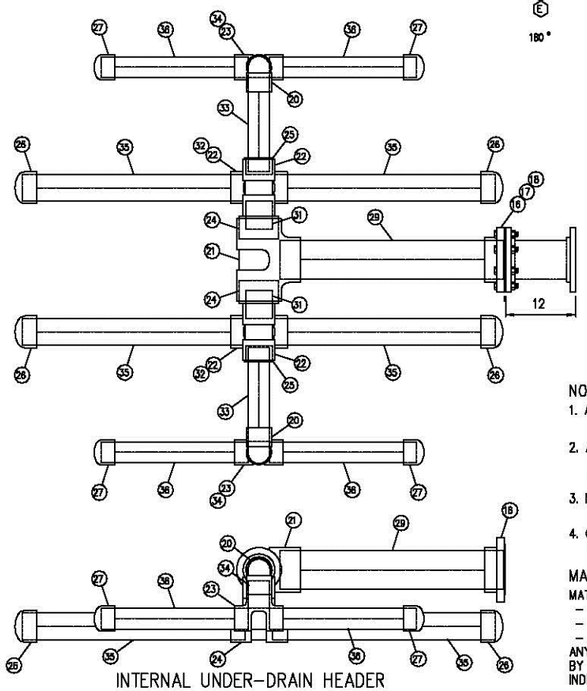
DATE: UNIT: INCH



ELEVATION VIEW
NOT TRUE ORIENTATION



PLAN VIEW
TRUE ORIENTATION



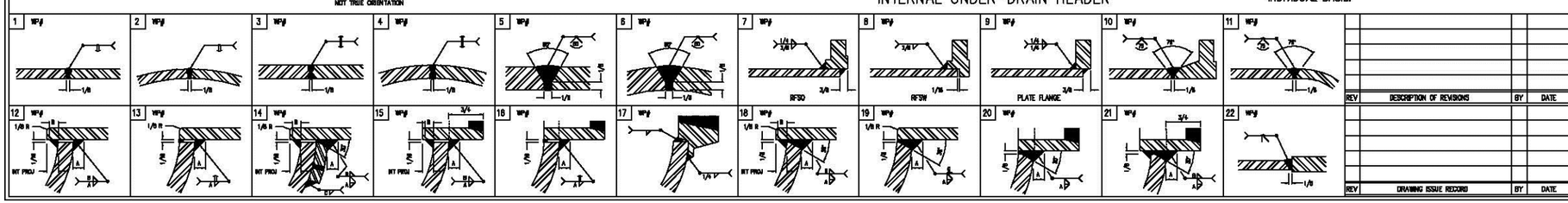
INTERNAL UNDER-DRAIN HEADER

NOTES:
1. ALL FLANGE BOLT HOLES TO STRADDLE VESSEL MAJOR CENTERLINES
2. A ROOT GAP OF 1/8" HAS BEEN ALLOWED AT ALL B.W. JOINTS TO PRODUCE PIPE LENGTHS SHOWN AND DIMENSIONED
3. NOZZLE REINFORCING PADS SHALL HAVE 1/4" – NPT TELL TALE HOLE
4. COUPLINGS SHALL HAVE 3/4" EXTERNAL PROJECTION UNLESS SHOWN OTHERWISE

MATERIAL SUBSTITUTION NOTE:

MATERIALS CONSTITUTE ACCEPTABLE ALTERNATES:
- USE OF SA-106-B IN PLACE OF SA-53-B
- USE OF SA-350-LF2 IN PLACE OF SA-105
- USE OF SA-420-WPL6 IN PLACE OF SA-234-WPB

ANY OTHER MATERIAL SUBSTITUTION MUST BE APPROVED BY ENGINEERING / Q.C.M. & A.I. IN WRITING ON AN INDIVIDUAL BASIS.



BILL OF MATERIAL

ITEM	REQ'D	PART REF	DESCRIPTION	MATERIAL SPEC	WEIGHT
1	1	SHELL	5/16" PLATE x 23'– 0 5/8" LG x 7'– 8" WIDE CAN (ROLL TO 96" OD)	HRCQ	2344
2	1	BTM HEAD	72" OD x 5/16" Nom t. NON–ASME F&D HEAD c/w 2" SF	HRCQ	731
3	1	TOP HEAD	72" OD x 5/16" Nom t. NON–ASME F&D HEAD c/w 2" SF	HRCQ	731
4	1	MANWAY	12" x 16" x 3/4" t. x 3" DEEP NECK ELLIP HATCH Cl# ___–___–___	HRCQ	38
5	4	NOZ A&B	6" – 150# RFSO FLANGE	SA–105	76
6	2	NOZ A&B	6" – STD WALL SMLS PIPE x 11 1/4" LG (PBE)	SA–53–B	34
7	1	NOZZLE C	2" – 3000# F.S. SCRD FULL COUPLING	SA–105	2
8	1	NOZZLE D	1" – NPT SERIES 250 F.S. WELD FLANGE (FLAT TYPE WITH PILOT)	SA–181	1
9	2	NOZ F&G	3" – NPT SERIES 250 F.S. WELD FLANGE (FLAT TYPE WITH PILOT)	SA–181	4
10	4	VESL LEG	6" WF @ 15 #/FT x 4'– 0 1/4" LG (SEE DETAIL)	SA–36	240
11	4	VESL LEG	1/4" x 8" FLATBAR x 5 1/2" LG (LEG TOP CAP)	SA–36	8
12	4	BASE PLT	3/4" x 8" FLATBAR x 8" LG	SA–36	52
13	2	LIFT LUG	1/2" x 4" FLATBAR x 4" LG	SA–36	4
14	1	HDR SUPT	2" x 2" x 3/16"t SQ HSS x 1'– 7 1/2" LG (SEE DETAIL)	SA–36	9
15	1	HDR SUPT	3/16" x 2" FLATBAR x 4" LG	SA–36	1
16	2	INTERNALS	6" – 150# SCH 80 PVC1 LOOSE RING VAN STONE SOCKET FLANGE	COLONIAL	
17	2	INTERNALS	6" – 150# GASKET	TREATED FIBER	
18	16	INTERNALS	3/4" DIA x 3 1/2" LG HEX HEAD MACH BOLT c/w HEX NUTS	ZINC PLATED	6
19	1	INTERNALS	6" – SCH 80 PVC1 ALL SOCKET 90 Deg ELBOW	COLONIAL	
20	2	INTERNALS	3" – SCH 80 PVC1 ALL SOCKET 90 Deg ELBOW	COLONIAL	
21	1	INTERNALS	6" – SCH 80 PVC1 ALL SOCKET TEE	COLONIAL	
22	4	INTERNALS	4" – SCH 80 PVC1 ALL SOCKET TEE	COLONIAL	
23	2	INTERNALS	3" – SCH 80 PVC1 ALL SOCKET TEE	COLONIAL	
24	2	INTERNALS	6" x 4" – SCH 80 PVC1 ALL SOCKET REDUCER BUSHING	COLONIAL	
25	2	INTERNALS	4" x 3" – SCH 80 PVC1 ALL SOCKET REDUCER BUSHING	COLONIAL	
26	4	INTERNALS	4" – SCH 80 PVC1 SOCKET CAP	COLONIAL	
27	4	INTERNALS	3" – SCH 80 PVC1 SOCKET CAP	COLONIAL	
28	1	INTERNALS	6" – SCH 80 PVC PIPE x 3'– 2 3/16" LG	PVC PLASTIC	
29	1	INTERNALS	6" – SCH 80 PVC PIPE x 3'– 2 3/16" LG	PVC PLASTIC	
30	1	INTERNALS	6" – SCH 80 PVC PIPE x 10" LG	PVC PLASTIC	
31	2	INTERNALS	4" – SCH 80 PVC PIPE x 4 13/16" LG	PVC PLASTIC	
32	2	INTERNALS	4" – SCH 80 PVC PIPE x 5" LG	PVC PLASTIC	
33	2	INTERNALS	3" – SCH 80 PVC PIPE x 1'– 4" LG	PVC PLASTIC	
34	1	INTERNALS	3" – SCH 80 PVC PIPE x 4 11/16" LG	PVC PLASTIC	
35	4	INTERNALS	4" – SCH 40 PVC (.010) WELL SCREEN SLOTTED PIPE x 3'– 2" LG	PVC PLASTIC	
36	4	INTERNALS	3" – SCH 40 PVC (.010) WELL SCREEN SLOTTED PIPE x 2'– 1" LG	PVC PLASTIC	
37	1	INTERNALS	ORTHOS LIQ SYS MODEL R2 FILTER NOZZLE c/w 0.3 mm SLOTS & 2" MPT CONN	PLASTIC	
38	1	SLURY VLV	3" – FEMALE NPT FULL PORT BALL VALVE (RUB #S82)	FORGED BRASS	
39	1	DRAIN VLV	2" – FEMALE NPT FULL PORT BALL VALVE (RUB #S82)	FORGED BRASS	
40	1	VENT VLV	1" – FEMALE NPT FULL PORT BALL VALVE (RUB #S82)	FORGED BRASS	
41	2	SLURY VLV	3" – STD WALL CLOSE NIPPLE	SA–53–B	
42	1	DRAIN VLV	2" – STD WALL CLOSE NIPPLE	SA–53–B	
43	1	VENT VLV	1" – XH WALL CLOSE NIPPLE	SA–53–B	
44	1	SLURY VLV	3" – STD MERCHANT F.S. SCRD 90 Deg ELBOW	SA–197	
45	1	INTERNALS	6" – BAND TYPE PIPE STRAP	STAINLESS	

SCHEDULE OF OPENINGS

MARK	SIZE	QTY	RATING	TYPE	DESCRIPTION	INT PROJ	WELD DETAIL	A	B	D
A	6"	1	150#	RFSO	INLET	AS SHOWN	7 & 12	1/4	1/4	
B	6"	1	150#	RFSO	OUTLET	AS SHOWN	7 & 12	1/4	1/4	
C	2"	1	3000#	CPLG	LIQUID DRAIN	1 7/16"	16	1/4	3/16	
D	1"	1	FNPT	WLD FLG	VENT	SEE WLD DTL	17			
E	18"	1	N/A	FF FLGNK	MANWAY c/w BLIND	1 11/16"	12	1/4	1/4	
F	3"	1	FNPT	WLD FLG	GAC DISCHARGE	SEE WLD DTL	17			
G	3"	1	FNPT	WLD FLG	GAC INLET	SEE WLD DTL	17			
H										
J										
K										
L										
M										

DESIGN DATA

Registration	NOT APPLICABLE	Year Built	2000
Construction	NOT APPLICABLE	Serial No.	00–____
Design Pressure	75 PSIG	Capacity (Vol.)	451.3 cu. ft.
Design Temperature	140 Deg F (LIMITED BY INTERNALS)	Shipping Wt. (Empty)	4380 POUNDS
External Pressure	NOT APPLICABLE	Wt. full of water	_____ POUNDS
Min. Des. Metal Temp	–20 Deg F AT 75 PSIG	Gaskets	TREATED FIBER
MAWP (New & Cold)	75 PSIG (LIMITED BY HEAD)	Studs & Nuts	MILD STEEL (ZINC PLATED)
MAWP (Hot & Corr'd)	75 PSIG (LIMITED BY HEAD)	Internal Surface Prep	SANDBLAST TO SSPC–SP6
Hydro Test Pressure	5 PSIG SOAP TEST /Medium: AIR	External Surface Prep	EXTERNAL POWER CLEAN
Corrosion Allowance	NONE	Internal Coating	SERIES 120 POTAPOX PLUS 10–16 mils DFT
Radiography	NONE	External Coating	MAB PLYMASTIC (Lt GRAY) 5–7 mils DFT

REV	DESCRIPTION OF REVISIONS	BY	DATE

REV	DRAWING ISSUE RECORD	BY	DATE

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

CUSTOMER: UNKNOWN
PROJECT: UNKNOWN

GENERAL ASSEMBLY LAYOUT – ELEVATION AND ORIENTATION
FOR
MODEL AF–10,000 FILTER 96" OD x 7' – 6" SEAM – SEAM

DRN BY	CHK'D BY	APP'D BY	DATE	SCALE	JOB No.	DRAWING No.	REV
DB (TF)	TB (TF)	EP (TF)	MAR 31/00	1" = 1'–0"	UNKNOWN	AF10000–STD	0

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

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

GENERAL DESCRIPTION

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

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

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

RESINTECH INC
INNOVATIONS IN ION EXCHANGE

CGS

CATION EXCHANGE RESIN
SOFTENING GRADE
Na FORM

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

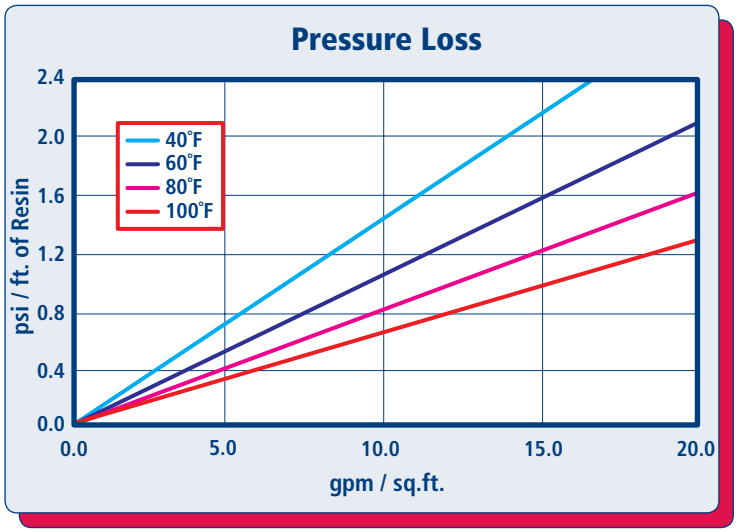
NSF/ANSI 44-61 CERTIFIED FOR MATERIAL SAFETY

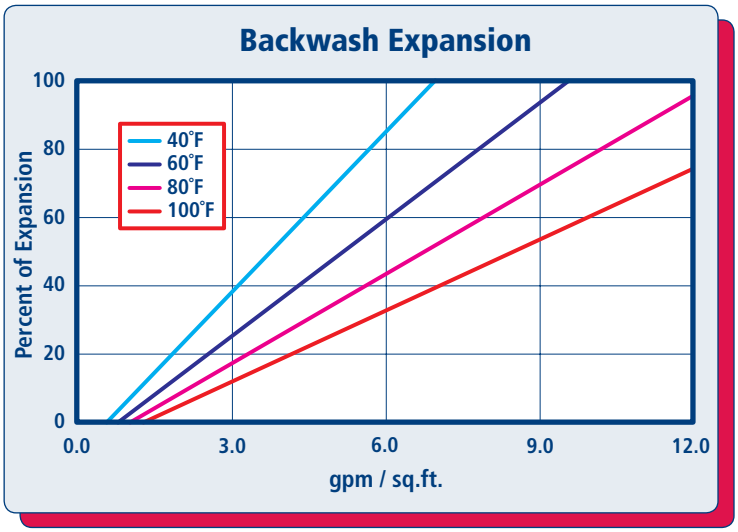
FEATURES & BENEFITS

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

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

HYDRAULIC PROPERTIES





PRESSURE LOSS

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

BACKWASH

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

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

RESINTECH® CGS

PHYSICAL PROPERTIES

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

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

SUGGESTED OPERATING CONDITIONS

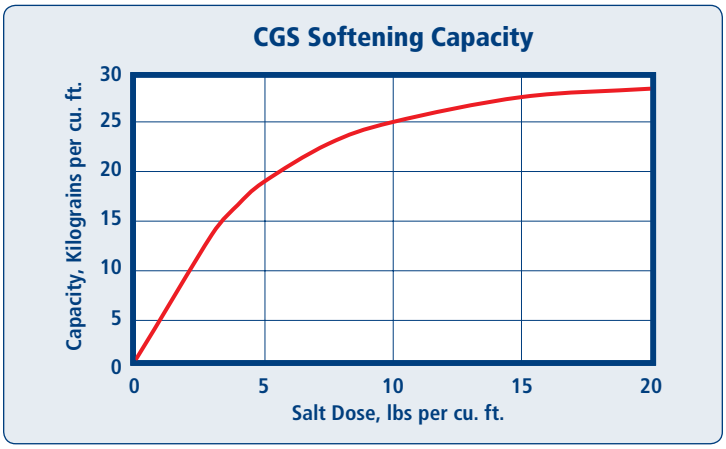
Maximum continuous temperature	
Sodium form	250˚F
Minimum bed depth	24 inches
Backwash expansion	25 to 50 percent
Maximum pressure loss	25 psi
Operating pH range	0 to 14 SU
Regenerant Concentration	
Salt cycle	10 to 15 percent NaCl
Regenerant level	4 to 15 lbs./cu.ft.
Regenerant flow rate.	0.5 to 1.5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

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

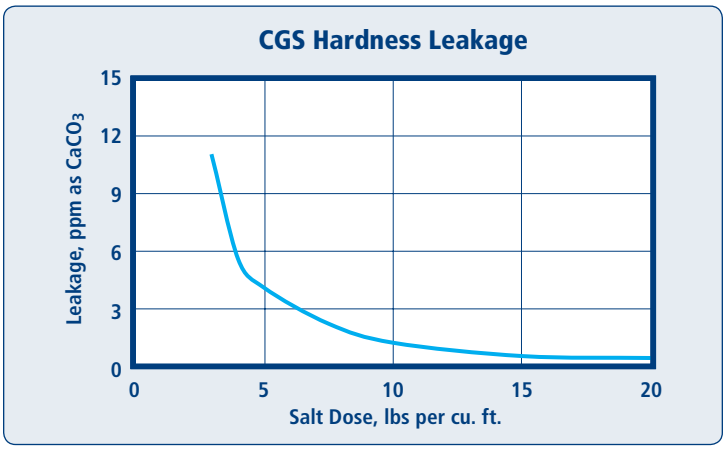
APPLICATIONS

SOFTENING

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



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



RESINTECH INC.
INNOVATIONS IN ION EXCHANGE

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

SBG1

ANION EXCHANGE RESIN TYPE ONE GEL Cl OR OH FORM

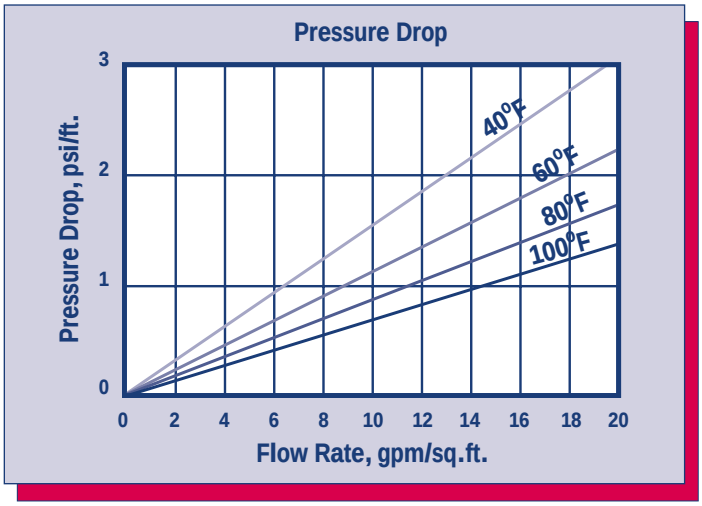
ResinTech SBG1 is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *ResinTech SBG1* is intended for use in all types of deionization systems and chemical processing applications.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

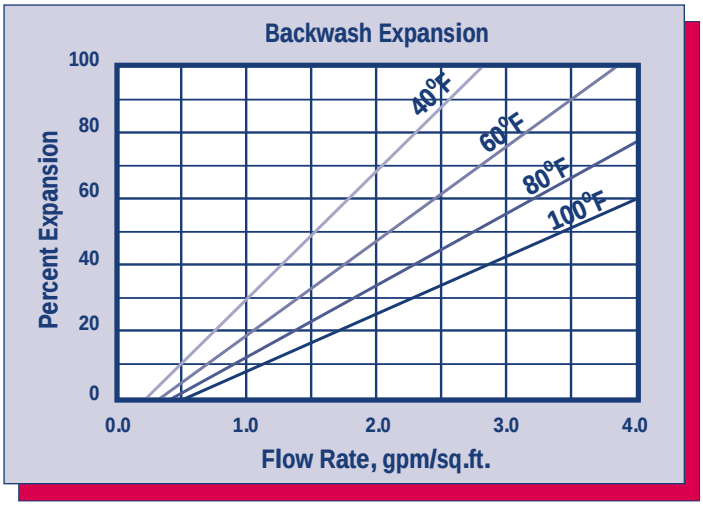
FEATURES & BENEFITS

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

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

HYDRAULIC PROPERTIES





PRESSURE DROP

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

BACKWASH

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

RESINTECH® SBG1

PHYSICAL PROPERTIES

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

SUGGESTED OPERATING CONDITIONS

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

OPERATING CAPACITY

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

Pounds NaOH/ft³	Capacity Kilograms per cubic foot			
	HCl	H_2SO_4	H_2SiO_3	H_2CO_3
4	11.3	14.0	14.7	18.6
6	12.8	16.3	17.3	19.8
8	14.3	13.3	19.5	21.6
10	15.5	20.0	22.2	22.2

APPLICATIONS

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

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

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

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

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

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

GROOVED & SMOOTH-END FLOWMETER MODEL MG/MS100

SPECIFICATIONS

PERFORMANCE

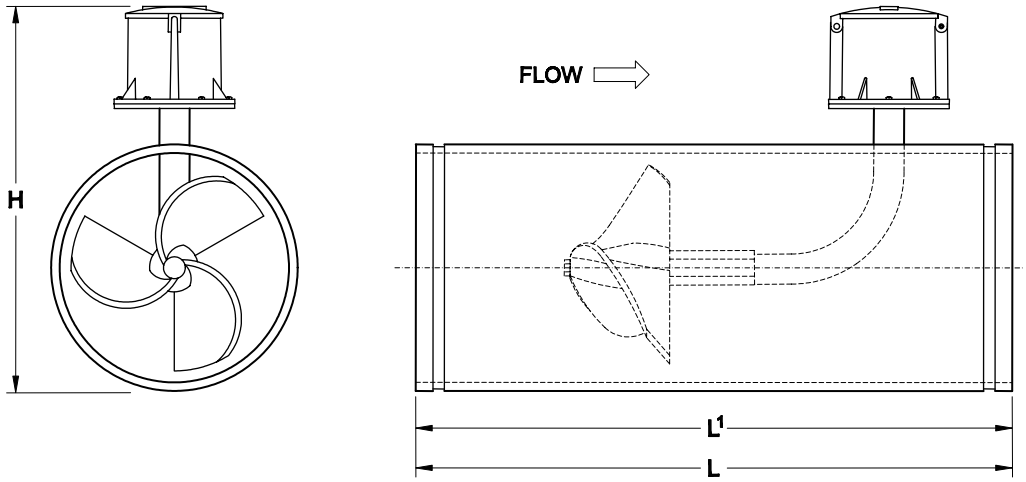
ACCURACY/REPEATABILITY: ±2% of reading guaranteed throughout full range. ±1% over reduced range. Repeatability 0.25% or better.
RANGE: (see dimensions chart below)
HEAD LOSS: (see dimensions chart below)
MAXIMUM TEMPERATURE: (Standard Construction) 160°F constant
PRESSURE RATING: 150 psi

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 hasp.
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



McCrometer reserves the right to change design or specifications without notice.

MG100 / MS100	DIMENSIONS												
Meter Size (inches)	**2**	**2 ½**	**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.	* See Special Note		17	40	54	68	87	106	140	144	172	181	223
H (inches)			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			13	20	20	20	20	20	20	22	22	22	22
L^1 (inches) MS100			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.

Appendix D

Supporting Information

MassDEP - Bureau of Waste Site Cleanup

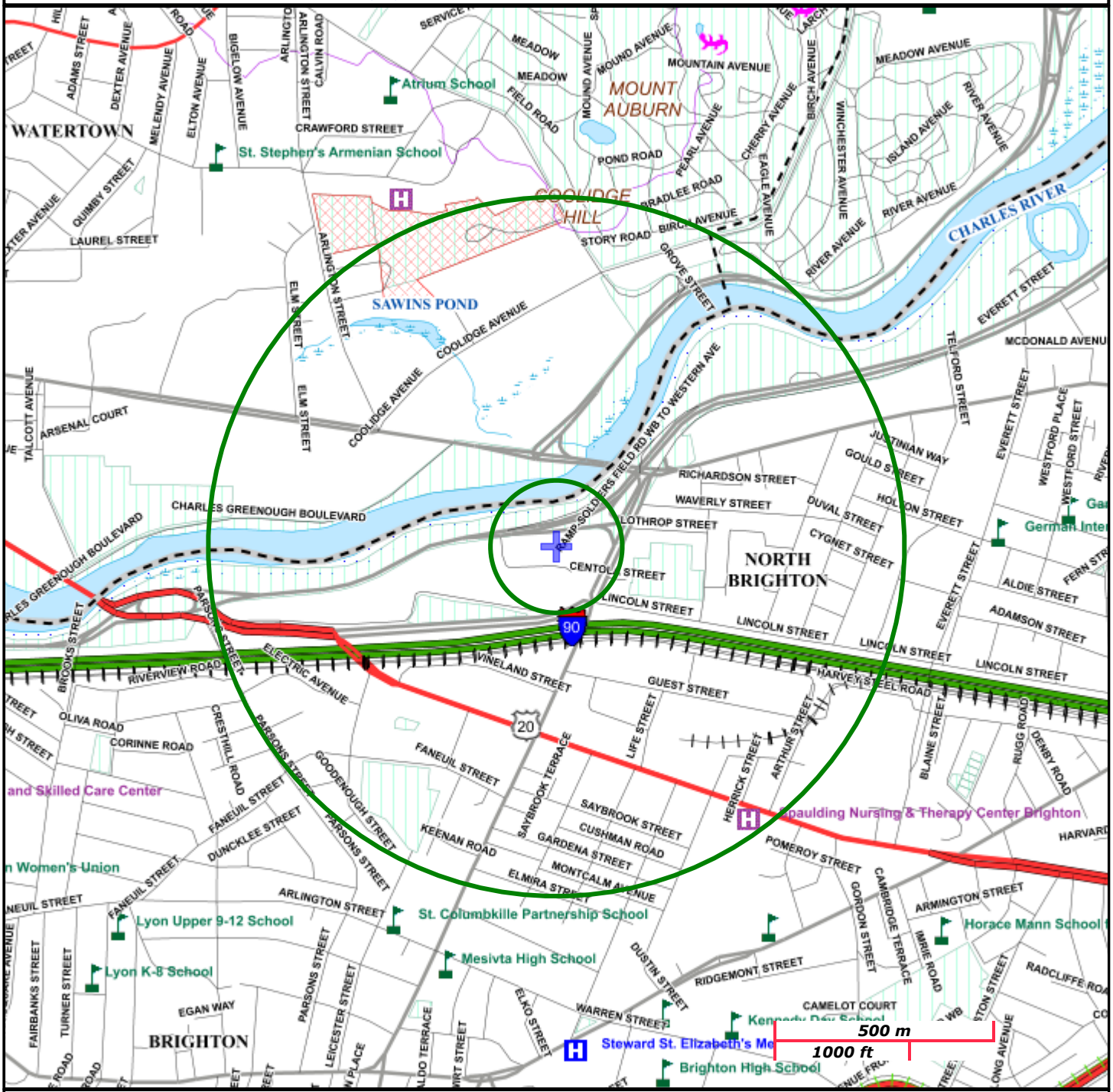
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
1500 SOLDIERS FIELD ROAD
1500 SOLDIERS FIELD ROAD BOSTON, MA

NAD83 UTM Meters:
4691984mN , 323066mE (Zone: 19)
March 26, 2021

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

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam
Aquifers: Medium Yield, High Yield, EPA Sole Source
Non Potential Drinking Water Source Area: Medium, High (Yield)
PWS Protection Areas: Zone II, IWPA, Zone A
Hydrography: Open Water, PWS Reservoir, Tidal Flat
Wetlands: Freshwater, Saltwater, Cranberry Bog
FEMA 100yr Floodplain; Protected Open Space; ACEC
Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential
Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Documentation of the Results of the ESA Eligibility Determination:

Using information in Appendix II of the NPDES RGP, the project located at 1500 Soldiers Field Road, Brighton, MA is eligible for coverage under this general permit under FWS Criterion A. This project is located in Suffolk 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:

No Endangered species found at this location.

United States Department of the Interior

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

In Reply Refer To: March 22, 2021
Consultation Code: 05E1NE00-2021-SLI-1968
Event Code: 05E1NE00-2021-E-06227
Project Name: 1500 Soldier Field Road

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2021-SLI-1968
Event Code: 05E1NE00-2021-E-06227
Project Name: 1500 Soldier Field Road
Project Type: Water Withdrawal / Depletion
Project Description: Construction Dewatering
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.3599204,-71.14848607184283,14z

Counties: Suffolk County, Massachusetts

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

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

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

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

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

Critical habitats

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

Documentation of the National Historic Preservation Act Eligibility Determination:

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): Boston; Place: Brighton; Street No: 1500; Street Name: soldiers field Rd; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year

BWSC Discharge Permit

Boston Water and Sewer Commission
980 Harrison Avenue
Boston, MA 02119-2540

DEWATERING DISCHARGE PERMIT APPLICATION

OWNER / AUTHORIZED APPLICANT PROVIDE INFORMATION HERE:

Company Name: 44 SFP, LLC Address: 125 Adams St. 3rd Floor

Phone Number: (617) 888-3424 Fax number: _____

Contact person name: Steve Ballas Title: _____

Cell number: (617) 888-3424 Email address: steve@ballasgroup.com

Permit Request (check one): ☑ New Application ☐ Permit Extension ☐ Other (Specify): _____

Owner's Information (if different from above):

Owner of property being dewatered: _____

Owner's mailing address: _____ Phone number: _____

Location of Discharge & Proposed Treatment System(s):

Street number and name: 1500 Soldiers Field Road Neighborhood Brighton

Discharge is to a: ☐ Sanitary Sewer ☐ Combined Sewer ☑ Storm Drain ☐ Other (specify): _____

Describe Proposed Pre-Treatment System(s): Bag Filtration

BWSC Outfall No. SDO150 Receiving Waters Charles River

Temporary Discharges (Provide Anticipated Dates of Discharge): From 08/01/2021 To 08/01/2022

☐ Groundwater Remediation	☐ Tank Removal/Installation	☑ Foundation Excavation
☐ Utility/Manhole Pumping	☐ Test Pipe	☑ Trench Excavation
☐ Accumulated Surface Water	☐ Hydrogeologic Testing	☐ Other _____

Permanent Discharges

☐ Foundation Drainage	☐ Crawl Space/Footing Drain
☐ Accumulated Surface Water	☐ Non-contact/Uncontaminated Cooling
☐ Non-contact/Uncontaminated Process	☐ Other; _____

---

1. Attach a Site Plan showing the source of the discharge and the location of the point of discharge (i.e. the sewer pipe or catch basin). Include meter type, meter number, size, make and start reading. Note. All discharges to the Commission's sewer system will be assessed current sewer charges.
2. If discharging to a sanitary or combined sewer, attach a copy of MWRA's Sewer Use Discharge permit or application.
3. If discharging to a separate storm drain, attach a copy of EPA's NPDES Permit or NOI application, or NPDES Permit exclusion letter for the discharge, as well as other relevant information.
4. Dewatering Drainage Permit will be denied or revoked if applicant fails to obtain the necessary permits from MWRA or EPA.

Submit Completed Application to: Boston Water and Sewer Commission
Engineering Customer Services
980 Harrison Avenue, Boston, MA 02119
Attn: Jodi Dobay, Engineering Customer Service
E-mail: beginj@bwsc.org
Phone: 617-989-7259 Fax: 617-989-7716

Signature of Authorized Representative for Property Owner: Stephen Ballas, Manager Date: 04/09/2021