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

May 5, 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)**
180 Third Avenue
Waltham, Massachusetts

Dear Sir/Madam:

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

Site Information

This NOI has been prepared for the management groundwater that will be generated during dewatering activities associated with construction of new buildings, specifically new foundation elements. The project is to take place at 180 Third Avenue, Waltham, Massachusetts (the Site). The work is anticipated to be completed within twelve months. A Site Locus is provided as **Figure 1** and a Site Plan satisfying the requirements of RGP Appendix IV Part I.B and I.D is provided as **Figure 2**.

Work Summary

The work includes the construction of a new 7-level office building and a 5-level parking garage. To complete portions of the foundations 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 excavations. The water generated during dewatering (source water) will be pumped to a treatment system prior to discharge to a stormwater catch basin with an outfall within an unnamed wetland with drainage to Kendal Brook and ultimately Beaver Brook. To characterize groundwater from the proposed excavation area, Sanborn, Head & Associates, Inc. (Sanborn, Head) collected representative groundwater samples from two onsite monitoring wells on February 15, 2021 (**Figure 2)**. A sample of the receiving water (Beaver Brook) was collected on April 30, 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**, and copies of the laboratory data reports are provided in **Appendix D**. Concentrations of total iron were detected in groundwater at concentrations above the respective NPDES RGP Effluent Limitations. To meet these standards, source water will undergo treatment that includes bag filtration prior to discharge. Details of the water treatment system are provided below.

Water Treatment System

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

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 350 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) mixed inside both weir tanks, carbon treatment and ion exchange media.

Discharge from the water treatment system will pass through a flow/totalizer meter prior to discharge into a stormwater catch basin that discharges to unnamed wetlands with drainage to Beaver Brook, 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.

Consultation with Federal Services

LRT reviewed online electronic data viewers and databases from the Massachusetts Geographical Information System (MassGIS), the Massachusetts Division of Fisheries and Wildlife (MassWildlife;

Natural Heritage and Endangered Species Program), and the U.S. National Parks Service Natural Historic Places (NPS). Based on this review, the Site and the point where the proposed discharge reaches the receiving surface water body are not located within an Area of Critical Environmental Concern (ACEC). The Site and the proposed discharge point are not located within Habitats of Rare Wetland Wildlife, Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or listed as a National Historic Place. Documentation is included in **Appendix E**.

Coverage under NPDES RGP

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP. LRT is requesting coverage under the NPDES RGP for the discharge of treated wastewater to Beaver Brook in support of construction dewatering activities that are to take place at 180 Third Avenue, Waltham, MA.

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, LRT is considered the Operator and will have operational control over the dewatering and water treatment systems.

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

Sincerely,
Lockwood Remediation Technologies, LLC

Jacob Jennings

Jacob Jennings
Staff Scientist

Kim Gravelle

Kim Gravelle, P.G.
Senior Project Manager

Encl: Figure 1 - Locus Plan
Figure 2 - Site Plan
Figure 3 - Water Treatment System Schematic
Appendix A - NOI Form
Appendix B – Site Assessment Map
Appendix C – Calculations and Correspondence for the Dilution Factor
Appendix D – Laboratory Data
Appendix E – Correspondence with Federal Services
Appendix F – Historic Properties Information
Appendix G – Water Treatment System Cutsheets and SDSs

cc: Cathy Vakalopoulos – Massachusetts Department of Environmental Protection
Kevin Stetson, Sanborn, Head & Associates, Inc.
Leah Zambetti Ryan, BP Third Avenue LLC
Justin Pollard, Consigli Construction Co., Inc

TABLES

Table 1
Summary of Groundwater Analytical Data
180 3rd Avenue
Waltham, Massachusetts

LOCATION	NPDES TBEL	NPDES WQBEL	Units	SH-201W	SH-202W
SAMPLING DATE				2/15/2021	2/15/2021
LAB SAMPLE ID				L2107243-01	L2107243-02
Anions by Ion Chromatography					
Chloride	Monitor Only	Monitor Only	mg/l	**466**	**167**
General Chemistry					
Chromium, Trivalent	0.323	-	mg/l	<0.01	<0.01
Solids, Total Suspended	30	-	mg/l	**6.1**	**350**
Cyanide, Total	178	-	mg/l	<0.005	<0.005
Chlorine, Total Residual	0.2	0.011	mg/l	<0.02	<0.02
Nitrogen, Ammonia	Monitor Only	Monitor Only	mg/l	0.127	<0.375
TPH, SGT-HEM	5	-	mg/l	<4	<4
Phenolics, Total	NS	-	mg/l	<0.03	<0.03
Chromium, Hexavalent	0.323	-	mg/l	<0.01	<0.01
Hardness as CaCO3	NS	-	mg/l	91.3	329
pH (H)	NS	-	SU	6.6	7.2
Microextractables by GC					
1,2-Dibromoethane	NS	-	mg/l	<0.00001	<0.00001
1,2-Dibromo-3-chloropropane	NS	-	mg/l	<0.00001	<0.00001
1,2,3-Trichloropropane	NS	-	mg/l	<0.000029	<0.000029
Polychlorinated Biphenyls by GC					
Total PCBs	0.064	-	mg/l	BDL (<0.00025)	BDL (<0.00025)
Semivolatile Organics by GC/MS					
Total Phthalates	0.19	-	mg/l	BDL (<0.0022)	BDL (<0.0022)
Semivolatile Organics by GC/MS-SIM					
Total Group 1 PAHs	0.001	-	mg/l	BDL (<0.0001)	BDL (<0.0001)
Total Group 2 PAHs	0.1	-	mg/l	BDL (<0.0001)	BDL (<0.0001)
Total SVOCs	NS	-	mg/l	BDL (<0.001)	BDL (<0.001)
Total Metals					
Antimony, Total	0.206	-	mg/l	<0.004	<0.004
Arsenic, Total	0.104	-	mg/l	<0.001	**0.00132**
Cadmium, Total	0.0102	-	mg/l	<0.0002	<0.0002
Chromium, Total	0.323	-	mg/l	<0.001	**0.00247**
Copper, Total	0.242	-	mg/l	<0.001	**0.00368**
Iron, Total	5	1	mg/l	**0.104**	**4.84**
Lead, Total	0.16	-	mg/l	<0.001	**0.00142**
Mercury, Total	0.00739	-	mg/l	<0.0002	<0.0002
Nickel, Total	1.45	-	mg/l	<0.002	**0.00712**
Selenium, Total	0.2358	-	mg/l	<0.005	<0.005
Silver, Total	0.0351	-	mg/l	<0.0004	<0.0004
Zinc, Total	0.42	-	mg/l	<0.01	**0.02411**
Volatile Organics by GC/MS					
Tetrachloroethene	0.005	-	mg/l	**0.0011**	<0.001
Total BTEX	0.1	-	mg/l	BDL (<0.001)	BDL (<0.001)
Volatile Organics by GC/MS-SIM					
1,4-Dioxane	NS	-	mg/l	<0.05	<0.05

Notes:
1. Samples were collected by Sanborn, Head & Associates, Inc. (Sanborn Head) on the indicated dates and were analyzed by Alpha Analytical Laboratories, Inc. of Westborough, MA.
2. Bolded values indicate detections above the laboratory reporting limits.
3. Abbreviations:
NPDES = National Pollutant Discharge Elimination System
TBEL = Technology based effluent limitation
WQBEL = Water quality based effluent limitation
MCP = Massachusetts Continentcy Plan
ug/L = micrograms per liter
mg/L = milligrams per liter
"<" indicates the analyte was not detected above the laboratory reporting limit shown
BDL = below detection limit
NS = No Standard

Table 2
Summary of Surface Water Quality
180 3rd Avenue
Waltham, Massachusetts

LOCATION	Units	2021-04-30-EFF
SAMPLING DATE		4/30/2021
SAMPLE TYPE		WATER
General Chemistry		
pH (H)	SU	**6.8**
Nitrogen, Ammonia	mg/l	**0.163**
Anions by Ion Chromatography		
Chloride	mg/l	**338**
Total Hardness by SM 2340B		
Hardness	ug/l	**106,000**
Semivolatile Organics by GC/MS-SIM		
Benzo(a)anthracene	ug/l	**0.923**
Benzo(a)pyrene	ug/l	**1.26**
Benzo(b)fluoranthene	ug/l	**2.55**
Benzo(k)fluoranthene	ug/l	**0.898**
Chrysene	ug/l	**1.97**
Dibenzo(a,h)anthracene	ug/l	**0.256**
Indeno(1,2,3-cd)pyrene	ug/l	**1.41**
Total Metals		
Antimony, Total	ug/l	<4
Arsenic, Total	ug/l	<1
Cadmium, Total	ug/l	<0.2
Chromium, Total	ug/l	<1
Copper, Total	ug/l	**3.92**
Iron, Total	ug/l	**176**
Lead, Total	ug/l	<1
Mercury, Total	ug/l	<0.2
Nickel, Total	ug/l	<2
Selenium, Total	ug/l	<5
Silver, Total	ug/l	<0.4
Zinc, Total	ug/l	**33.68**

Notes:
1. The samples were collected by Sanborn, Head & Associates, Inc. on the dates indicated and analyzed by Alpha Analytical Laboratories, Inc. of Westborough, Massachusetts.
2. Bolded values indicate detections of that analyte above laboratory reporting limits.
3. Abbreviations:
"<" indicates the analyte was not detected above the laboratory reporting limit shown
NS = no standard
ug/l = micrograms per liter
mg/l = milligrams per liter

FIGURES

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

Drawn By: D.Long
Designed By: C.Disenhof
Reviewed By: K.Stetson
Project No: 4331.00
Date: May 2021

SCALE: 1:25,000

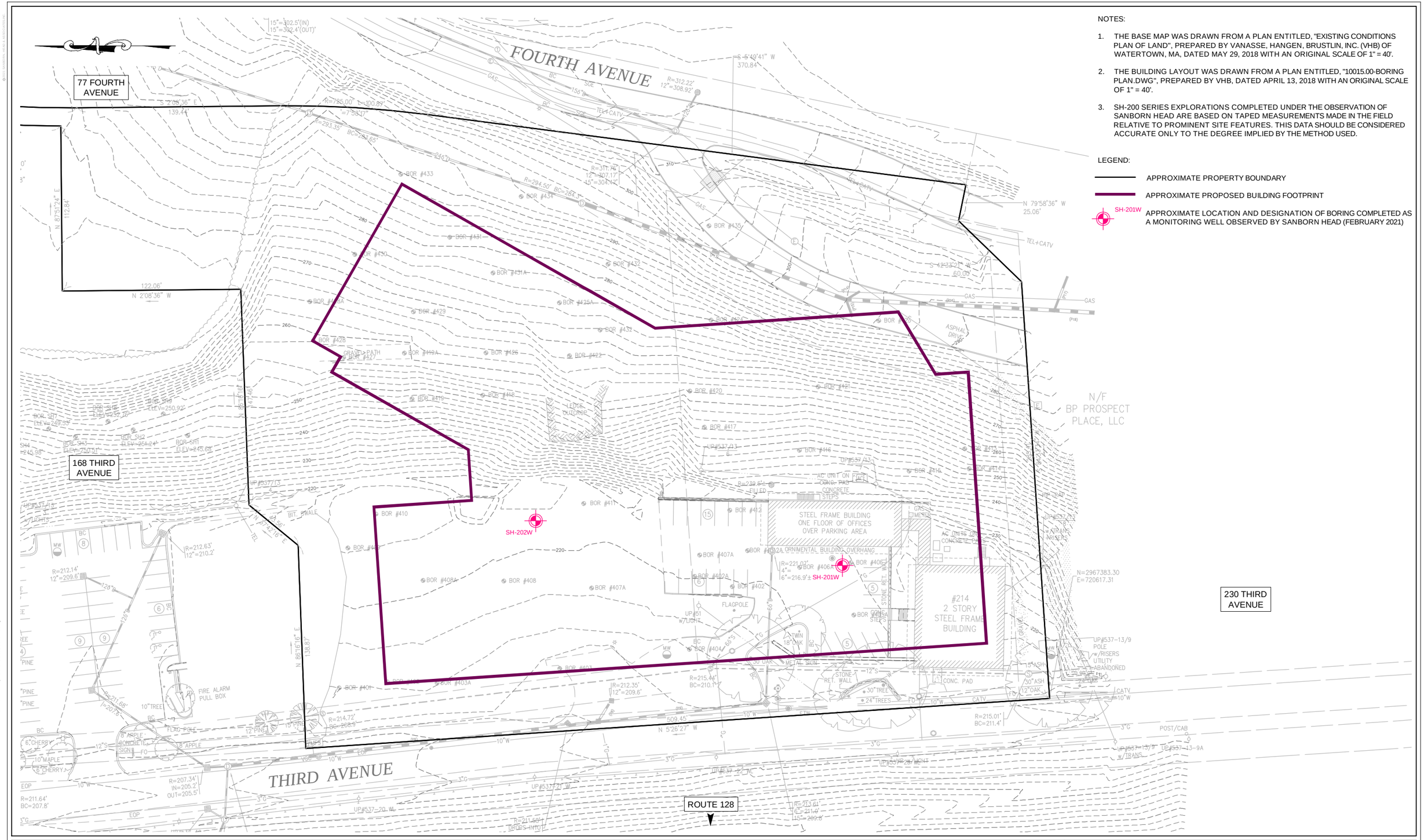
SANBORN HEAD

Figure 1

Locus Plan

Remediation General Permit

180 Third Avenue
Waltham, Massachusetts



NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS PLAN OF LAND", PREPARED BY VANASSE, HANGEN, BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED MAY 29, 2018 WITH AN ORIGINAL SCALE OF 1" = 40'.
2. THE BUILDING LAYOUT WAS DRAWN FROM A PLAN ENTITLED, "10015.00-BORING PLAN.DWG", PREPARED BY VHB, DATED APRIL 13, 2018 WITH AN ORIGINAL SCALE OF 1" = 40'.
3. SH-200 SERIES EXPLORATIONS COMPLETED UNDER THE OBSERVATION OF SANBORN HEAD ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE PROPOSED BUILDING FOOTPRINT
- SH-201W — APPROXIMATE LOCATION AND DESIGNATION OF BORING COMPLETED AS A MONITORING WELL OBSERVED BY SANBORN HEAD (FEBRUARY 2021)

SANBORN HEAD

GRAPHICAL SCALE
30' 15' 0' 30' 60'

NO.	DATE	DESCRIPTION	BY

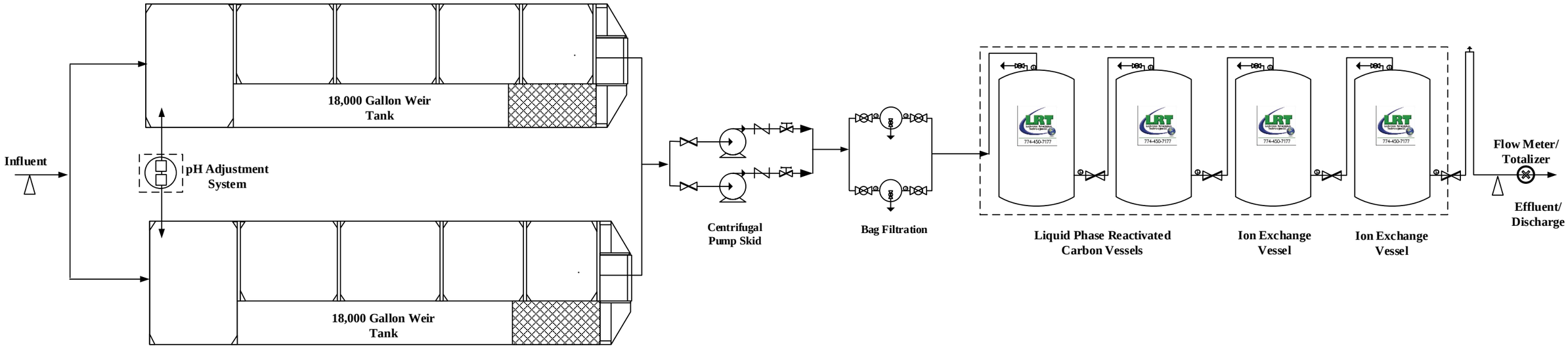
DRAWN BY: D.DOMBROWSKY
DESIGNED BY: A.SANTAMARIA
REVIEWED BY: K. STETSON
PROJECT MGR: A.SANTAMARIA
PIC: K.STETSON
DATE: MAY 2021

REMEDIATION GENERAL PERMIT
180 THIRD AVENUE
WALTHAM, MASSACHUSETTS

PROJECT NUMBER: 4331.00

EXPLORATION LOCATION PLAN

SHEET NUMBER: 2



Key:

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

Notes:

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

Lockwood Remediation Technologies, LLC 89 Crawford Street Leominster, MA 01453 Office: 774-450-7177		**Water Treatment System Schematic**	**180 Third Avenue** **Waltham, Masachusetts**	**PROJECT No.** 2-2196	**FIGURE No.** 1
DESIGNED BY: LRT	**DRAWN BY:** JHJ				
CHECKED BY:	**DATE:**				

APPENDIX A

NOTICE OF INTENT FORM

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

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
180 Third Avenue</td><td colspan="3">Site address: 180 Third Avenue
Street:</td></tr>
<tr><td>City: Waltham</td><td>State: MA</td><td>Zip: 02451</td></tr>
<tr><td rowspan="4">2. Site owner
BP Third Avenue LLC

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Leah Zambetti Ryan</td></tr>
<tr><td colspan="2">Telephone: 617-236-3383</td><td>Email: Lryan@bxp.com</td></tr>
<tr><td colspan="3">Mailing address: 800 Boylston Street Suite 1900
Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02199</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
Lockwood Remediation Technologies, LLC</td><td colspan="3">Contact Person: Paul Lockwood</td></tr>
<tr><td colspan="2">Telephone: 508-450-8802</td><td>Email: plockwood@lrt-llc.net</td></tr>
<tr><td colspan="3">Mailing address:
Street: 89 Crawford Street</td></tr>
<tr><td>City: Leominster</td><td>State: MA</td><td>Zip: 01453</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
CGP #MAR100381 (Pending)

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ■ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):
☐ 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):
Beaver Brook via Unnamed Stream	MA72-28	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. Refer to App B for Listed Impairments and TMDLs.

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	NA - See App C
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.	1 - See App C

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: April 30, 2021

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

C. Source water information:

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

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

2. Source water contaminants: metals, tetrachloroethylene	
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): Unamed Wetland (drainage to Beaver Brook via Kendal Brook)	Outfall location(s): (Latitude, Longitude) Approximately 42.39647 Latitude, -71.25683 Longitude
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge through public/private storm water system ■ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ■ No, if so, explain, with an estimated timeframe for obtaining permission: Permission confirmed from owner of private system. City of Waltham is being coordinated and permission expected by May 7, 2021 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): 5/2021 - 4/2022 Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No See Figure 3	

<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		✔	2	4500NH3-	0.375	0.127	0.127	Report mg/L	---
Chloride		✔	2	300.0	12500	466000	466000	Report µg/l	---
Total Residual Chlorine	✔		2	4500CL-D	0.02	ND	ND	0.2 mg/L	0.011 mg/L
Total Suspended Solids		✔	2	2540D	25	350	350	30 mg/L	---
Antimony	✔		2	200.8	4.0	ND	ND	206 µg/L	
Arsenic		✔	2	200.8	1.0	1.32	1.32	104 µg/L	
Cadmium	✔		2	200.8	0.2	ND	ND	10.2 µg/L	
Chromium III	✔		2	200.8	10	ND	ND	323 µg/L	
Chromium VI	✔		2	7196A	10	ND	ND	323 µg/L	
Copper		✔	2	200.8	1.0	3.68	3.68	242 µg/L	
Iron		✔	2	19,200.7	50	4840	4840	5,000 µg/L	1000 ug/L
Lead		✔	2	200.8	1.0	1.42	1.42	160 µg/L	
Mercury	✔		2	245.1	0.2	ND	ND	0.739 µg/L	
Nickel		✔	2	200.8	2	7.12	7.12	1,450 µg/L	
Selenium	✔		2	200.8	5	ND	ND	235.8 µg/L	
Silver	✔		2	200.8	0.4	ND	ND	35.1 µg/L	
Zinc		✔	2	200.8	10	24.11	24.11	420 µg/L	
Cyanide	✔		2	4500CN-C	5	ND	ND	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX	✔		2	multiple	NA	ND	ND	100 µg/L	---
Benzene	✔		2	624.1	1	ND	ND	5.0 µg/L	---
1,4 Dioxane	✔		2	624.1-SIM	50	ND	ND	200 µg/L	---
Acetone	✔		2	624.1	0.01	ND	ND	7.97 mg/L	---
Phenol	✔		2	4420.1	30	ND	ND	1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		2	624.1	1	ND	ND	4.4 µg/L	
1,2 Dichlorobenzene	✔		2	624.1	5	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	✔		2	624.1	5	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	✔		2	624.1	5	ND	ND	5.0 µg/L	---
Total dichlorobenzene	✔		2	624.1	15	ND	ND	763 µg/L in NH	---
1,1 Dichloroethane	✔		2	624.1	1.5	ND	ND	70 µg/L	---
1,2 Dichloroethane	✔		2	624.1	1.5	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	✔		2	624.1	1	ND	ND	3.2 µg/L	---
Ethylene Dibromide	✔		2	504.1	0.01	ND	ND	0.05 µg/L	---
Methylene Chloride	✔		2	624.1	1	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane	✔		2	624.1	2	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	✔		2	624.1	1.5	ND	ND	5.0 µg/L	---
Trichloroethylene	✔		2	624.1	1	ND	ND	5.0 µg/L	---
Tetrachloroethylene		✔	2	624.1	1	1.1	1.1	5.0 µg/L	
cis-1,2 Dichloroethylene	✔		2	624.1	1	ND	ND	70 µg/L	---
Vinyl Chloride	✔		2	624.1	1	ND	ND	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates	✔		2	625.1	27.2	ND	ND	190 µg/L	----
Diethylhexyl phthalate	✔		2	625.1	2.2	ND	ND	101 µg/L	
Total Group I PAHs	✔		2	625.1	0.7	ND	ND	1.0 µg/L	---
Benzo(a)anthracene	✔		2	625.1	0.1	ND	ND	As Total PAHs	
Benzo(a)pyrene	✔		2	625.1	0.1	ND	ND		
Benzo(b)fluoranthene	✔		2	625.1	0.1	ND	ND		
Benzo(k)fluoranthene	✔		2	625.1	0.1	ND	ND		
Chrysene	✔		2	625.1	0.1	ND	ND		
Dibenzo(a,h)anthracene	✔		2	625.1	0.1	ND	ND		
Indeno(1,2,3-cd)pyrene	✔		2	625.1	0.1	ND	ND		

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs	✔		2	625.1	0.8	ND	ND	100 µg/L	---
Naphthalene	✔		2	625.1	0.1	ND	ND	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		2	608.3	0.25	ND	ND	0.000064 µg/L	---
Pentachlorophenol	✔		2	625.1	1	ND	ND	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		NA	NA	NA	NA	NA	5.0 mg/L	---
Ethanol	✔		2	1671A	20	ND	ND	Report mg/L	---
Methyl-tert-Butyl Ether	✔		2	624.1	10	ND	ND	70 µg/L	
tert-Butyl Alcohol	✔		2	624.1	100	ND	ND	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		2	624.1	20	ND	ND	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
pH		✔	2	4500H+B	NA	6.57	6.57		
Hardness		✔	2	3005A	0.660	329000	329000		
Total Chromium		✔	2	200.8	1	2.47	2.47		

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:

pH adjustment may be used to meet effluent requirements.

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 350 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. If required, contingency treatment may include a pH conditioner (sulfuric acid) mixed inside both weir tanks, carbon and or ion exchange media.

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: activated carbon, ion exchange, pH adjustment

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 Filters 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.	350
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:

2. Provide the following information for each chemical/additive, using attachments, if necessary:
Refer to cover letter
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. See Appendix E

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. See Appendix F

☐ **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

See Appendix F

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

I. Supplemental information

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

Appendix B includes a Site Assessment Map
Appendix C includes calculations and correspondence for the dilution factor.
Appendix D includes the analytical laboratory data collected for the influent and effluent water.
Appendix E includes correspondence from the National Oceanic and Atmospheric Administration and the US Fish and Wildlife Service.
Appendix F includes a list of Historic Properties in Waltham and a map showing their locations relative to the Site.

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

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

J. Certification requirement

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

BMPP certification statement: A BMPP meeting the requirements of this general permit will be developed and implemented upon initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ■ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ■ NA ☐
Signature: 	Date: 5/5/2021
Print Name and Title: Paul Lockwood, President	

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

WM15 - NPDES Notice of Intent Application

Permittee Information

Name: PAUL LOCKWOOD
Phone: (774) 450-7177, (508) 450-8802
Address: LOCKWOOD REMEDIATION TECHNOLOGIES, LLC, 89 CRAWFORD STREET
LEOMINSTER, MA 01453

Permittee Company Information

Name: Lockwood Remediation Technologies, LLC
Kim Gravelle
Phone: (774) 450-7177
Address: LOCKWOOD REMEDIATION TECHNOLOGIES, LLC, 89 CRAWFORD STREET
LEOMINSTER, MA 01453

Application Submitter Information

Name: KIM GRAVELLE
Phone: (774) 450-7177, (774) 479-1048
Address: LOCKWOOD REMEDIATION TECHNOLOGIES, LLC, 89 CRAWFORD STREET
LEOMINSTER, MA 01453

Facility Information

180 Third Avenue
180 THIRD AVENUE WALTHAM, MA 02451
DEP REGION:
FACILITY ID:
HW ID:

General Information

Please identify the type of permit being requested	Remediation General Permit (RGP)

Documents

Documents

Required Documents:
1. EPA NOI

Special Fee Provision

Exemption

Exclusion (special agreement or policy)

Substitution (ASP/IRP)

Double Fee for Enforcement

Hardship payment extension request

Attachments

Name	Description	Type	Latest Updated
NPDES RGP NOI - 180 Third Ave..pdf	)ES Remediation General Permit (RGP) I	EPA NOI	05/05/2021

Fee Info

Amount:	$ 500.00	Description:	WM15 Application Fees
Status:	Paid	Payment Date:	05-May-2021

Certification Information

Individual
KIM GRAVELLE
LOCKWOOD REMEDIATION TECHNOLOGIES, LLC, 89
CRAWFORD STREET
LEOMINSTER, MA 01453
United States

Telephone #: (774) 450-7177, (774) 479-1048
E-mail: kgravelle@lrt-llc.net

I certify that I am familiar with the work proposed and that to the best of my knowledge and belief the information contained in this application is true, complete, and accurate.

APPENDIX B

MASSACHUSETTS CATEGORY 5 WATERS AND SITE ASSESSMENT MAP

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

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Beaver Brook	MA72-28	Headwaters, perennial portion north of Route 2, Lexington to mouth at confluence with the Charles River, Waltham (one culverted portion approximately 2900 feet (0.55mile)).	5.50	Miles	(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					(Other anthropogenic substrate alterations*)	
					Algae	40317
					Dissolved Oxygen	40317
					Escherichia Coli (E. Coli)	32379
					Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
					Sedimentation/Siltation	
Bulloughs Pond	MA72011	Newton.	7.00	Acres	Algae	
					Nutrient/Eutrophication Biological Indicators	
Cambridge Reservoir	MA72014	Waltham/Lincoln/Lexington.	531.00	Acres	Chloride	
Cambridge Reservoir, Upper Basin	MA72156	Lincoln/Lexington.	44.00	Acres	Aquatic Plants (Macrophytes)	
					Chloride	
					Turbidity	
Chandler Pond	MA72017	Boston.	11.00	Acres	Algae	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
					Transparency / Clarity	
Charles River	MA72-03	From Milford WWTF discharge (NPDES: MA0100579), Hopedale to outlet Box Pond (formerly segment MA72008), Bellingham.	3.40	Miles	Algae	40317
					DDT in Fish Tissue	
					Dissolved Oxygen Supersaturation	40317
					Escherichia Coli (E. Coli)	32365
					Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
Charles River	MA72-04	From outlet Box Pond, Bellingham to inlet Populatic Pond, Norfolk/Medway (one culverted portion approximately 350 feet (0.07mile)).	11.50	Miles	(Flow Regime Modification*)	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Escherichia Coli (E. Coli)	32366
					Fish Bioassessments	
					Mercury in Fish Tissue	

MassDEP - Bureau of Waste Site Cleanup

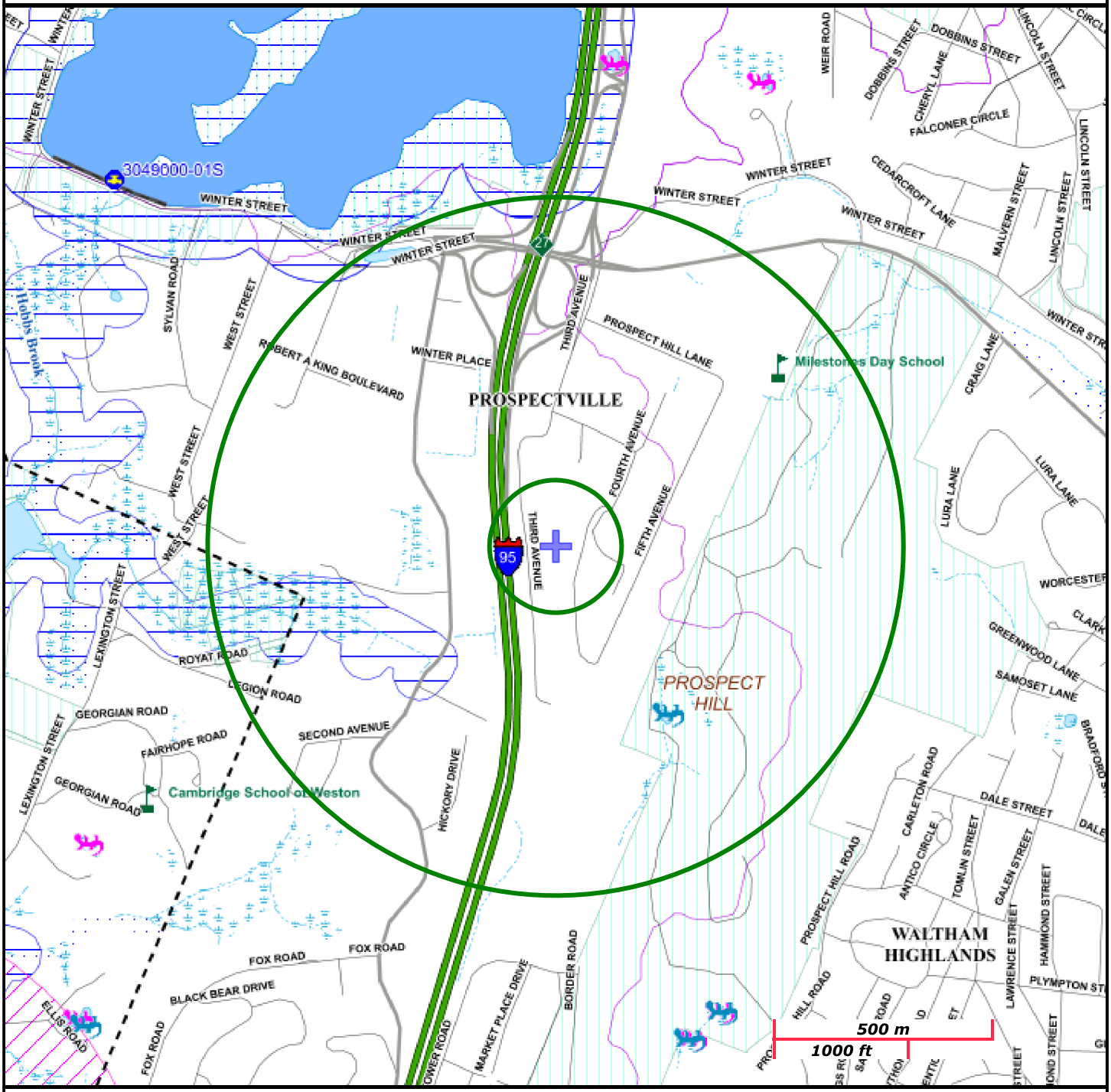
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
180 THIRD AVE
180 3RD AVE WALTHAM, MA

NAD83 UTM Meters:
4695683mN , 313916mE (Zone: 19)
April 29, 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.

APPENDIX C

DILUTION CALCULATIONS & CORRESPONDANCE

From: Ruan, Xiaodan (DEP)
To: Americo Santamaria
Cc: Vakalopoulos, Catherine (DEP); Kevin Stetson; Corinne Disenhof; Anna Campbell
Subject: RE: 180 Third Ave, Waltham, MA
Date: Friday, April 30, 2021 4:43:28 PM

Hi America,

I looked at the GIS, google map, and the imagery layer in the StreamStats, but could not locate the Kendall brook. Is it primarily underground, or is it just a tiny brook?

The StreamStats cannot calculate a 7Q10 for the location with latitude/longitude of 42.39647, -71.25683; also, the report indicates the brook is intermittent; therefore, you were correct that the dilution factor would be 0/1, which is no dilution.

Here is the water quality information you will need to fill out the NOI:

> Waterbody and ID: Beaver River (MA72-28), within Charles River Watershed
> Classification: B
> Outstanding Resource Water?: no
> State's most recent Integrated List is located here: https://www.mass.gov/files/documents/2020/01/07/16ilwplist.pdf, search for "MA72-28" to see the causes of impairments.
> TMDLs: there are two approved TMDLs for pathogens and nutrients for this segment.

Since this is not a current MCP site, in addition to submitting the NOI to EPA, you need to apply with MassDEP and submit a $500 fee using the ePLACE. The instructions are located here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent. Technical assistance is available on the front page of the ePLACE application webpage.

Please let me know if you have any other questions.

Thanks,
Xiaodan

Xiaodan Ruan
Environmental Engineer
Massachusetts Department of Environmental Protection
One Winter Street, Boston, MA 02108
(617) 654-6517
xiaodan.ruan@mass.gov

From: Americo Santamaria <asantamaria@sanbornhead.com>
Sent: Thursday, April 29, 2021 12:55 PM
To: Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>

Cc: Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>; Kevin Stetson <kstetson@sanbornhead.com>; Corinne Disenhof <cdisenhof@sanbornhead.com>; Anna Campbell <acampbell@sanbornhead.com>
Subject: 180 Third Ave, Waltham, MA
Importance: High

Good afternoon, Xiaodan and Cathy,

Thank you again for your time yesterday on the call. I've been looking into the NOI and tracking down receiving water information.

As part of the NPDES RGP NOI, dewatering for the 180 Third Ave Project located in Waltham, MA may require discharge to a storm drain which empties to a detention pond located at 20 City Point in Waltham, MA. The detention pond empties to Kendall Brook at an outlet located at approximately 42.39647 Latitude, -71.25683 Longitude.

Our understanding is that Kendall Brook is not listed on the integrated list of waters and a 7Q10 is not directly available. I have provided the StreamStats report showing the basin and peak-flow statistics; however, at this time we are requesting a dilution factor of 1, which I believe does not require formal calculations to be checked. Kendall Brook eventually empties into Beaver Brook which empties into the Charles River. We intend to collect our receiving water sample from surface water immediately downstream of the closest outlet at the location provided above.

Please let me know at your earliest convenience if my assessment provided above is correct.

Thank you.

-Rico

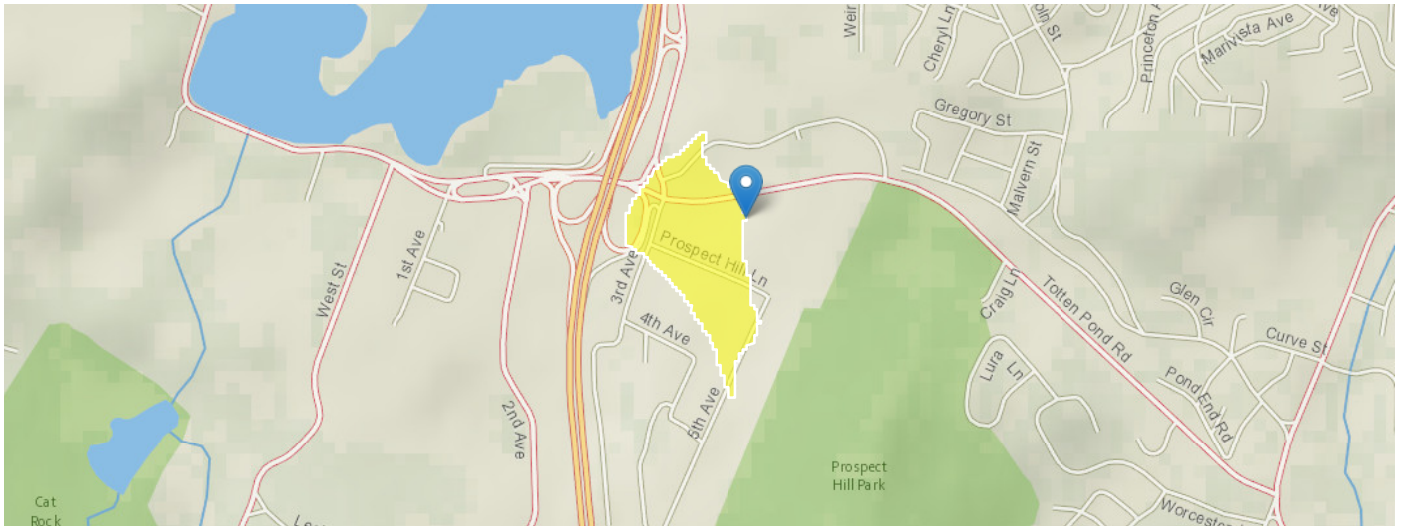
Americo J. Santamaria
Project Manager

SANBORN | HEAD & ASSOCIATES, INC.
D 978.577.1040 | M 603.520.5106 | 1 Technology Park Drive, Westford, MA 01886

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

180 Third Ave - NPDES RGP

Region ID: MA
Workspace ID: MA20210429161225198000
Clicked Point (Latitude, Longitude): 42.39647, -71.25683
Time: 2021-04-29 12:12:43 -0400



As part of the NPDES RGP NOI, dewatering for the 180 Third Ave Project located in Waltham, MA may require discharge to a storm drain which empties to a detention pond located at 20 City Point in Waltham, MA. The detention pond empties to Kendall Brook at an outlet located at approximately 42.39647 Latitude, -71.25683 Longitude.

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0482	square miles
ELEV	Mean Basin Elevation	222	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	0	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	3.343	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent
FOREST	Percentage of area covered by forest	16.75	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0482	square miles	0.16	512
ELEV	Mean Basin Elevation	222	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	0	percent	0	32.3

Peak-Flow Statistics Disclaimers [Peak Statewide 2016 5156]

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

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

Statistic	Value	Unit
50-percent AEP flood	4.13	ft^3/s
20-percent AEP flood	7.17	ft^3/s
10-percent AEP flood	9.67	ft^3/s
4-percent AEP flood	13.4	ft^3/s
2-percent AEP flood	16.5	ft^3/s
1-percent AEP flood	19.9	ft^3/s
0.5-percent AEP flood	23.7	ft^3/s
0.2-percent AEP flood	29.1	ft^3/s

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0482	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	3.343	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

Statistic	Value	Unit

Low-Flow Statistics Citations

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0482	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	3.343	percent	0.32	24.6

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

Statistic	Value	Unit

Flow-Duration Statistics Citations

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0482	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	0	percent	0	100
FOREST	Percent Forest	16.75	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report [Perennial Flow Probability]

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

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.359	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Application Version: 4.5.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.1

Enter number values in green boxes below

Enter values in the units specified

↓

0	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

↓

0

Enter values in the units specified

↓

329	C_d = Enter influent hardness in **mg/L** $CaCO_3$
106	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

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

↓

6.8	pH in **Standard Units**
20	Temperature in **°C**
0.163	Ammonia in **mg/L**
106	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
3.92	Copper in **µg/L**
176	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
33.68	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
0.127	Ammonia in **mg/L**
0	Antimony in **µg/L**
1.32	Arsenic in **µg/L**
0	Cadmium in **µg/L**
2.47	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
3.68	Copper in **µg/L**
4840	Iron in **µg/L**
1.42	Lead in **µg/L**
0	Mercury in **µg/L**
7.12	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
24.11	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
1.1	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Notes:

Freshwater: critical low flow equal to the 7Q10; enter alternate low flow if approved by the State
Saltwater (estuarine and marine): enter critical low flow if approved by the State; enter 0 if no entry
Discharge flow is equal to the design flow or 1 MGD, whichever is less
Optional entry for Q_r; leave 0 if no entry

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

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

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

Dilution Factor	1.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**11**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	**104**	µg/L	10	µg/L		
Cadmium	**10.2**	µg/L	0.6540	µg/L		
Chromium III	**323**	µg/L	228.6	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	25.8	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	14.49	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	142.9	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	29.3	µg/L		
Zinc	**420**	µg/L	328.7	µg/L		
Cyanide	**178**	mg/L	5.2	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	1.6	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	3.3	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	190	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(a)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(b)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Benzo(k)fluoranthene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Chrysene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L	---	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

APPENDIX D

ANALYTICAL DATA REPORTS

ANALYTICAL REPORT

Lab Number:	L2107243
Client:	Sanborn, Head & Associates, Inc. 1 Technology Park Drive Westford, MA 01886
ATTN:	Americo Santamaria
Phone:	(978) 577-1040
Project Name:	180 3RD AVENUE
Project Number:	4331.00
Report Date:	05/03/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2107243-01	SH-201W	WATER	180 3RD AVE. WALTHAM	02/15/21 11:34	02/15/21
L2107243-02	SH-202W	WATER	180 3RD AVE. WALTHAM	02/15/21 09:50	02/15/21

Project Name:	180 3RD AVENUE	**Lab Number:**	L2107243
Project Number:	4331.00	**Report Date:**	05/03/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: 180 3RD AVENUE **Lab Number:** L2107243
Project Number: 4331.00 **Report Date:** 05/03/21

Case Narrative (continued)

Report Revision

May 03, 2021: The Semivolatile Organics analyte list has been amended on L2107243-01 and -02 to include Phenol. In addition, this report includes the results of the Hardness analysis performed on L2107243-01 and -02.

Report Submission

February 22, 2021: This final report includes the results of all requested analyses.
February 19, 2021: This is a preliminary report.

The analysis of Ethanol was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

Volatile Organics by SIM

The WG1465248-3 LCS recovery, associated with L2107243-01 and -02, is above the acceptance criteria for 1,4-dioxane (150%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

Semivolatile Organics by SIM

L2107243-02: The surrogate recovery for 2,4,6-tribromophenol (134%) is outside the acceptance criteria; however, since the sample was non-detect for all target analytes associated with this surrogate, re-analysis was not required.

Total Metals

The WG1465223-7 MS recoveries for iron (0%) and hardness (71%), performed on L2107243-02, do not apply because the sample concentrations are greater than four times the spike amount added.

Project Name:	180 3RD AVENUE	**Lab Number:**	L2107243
Project Number:	4331.00	**Report Date:**	05/03/21

Case Narrative (continued)

Nitrogen, Ammonia

L2107243-02: The sample has an elevated detection limit due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 05/03/21

ORGANICS

VOLATILES

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 02/16/21 09:21
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethane	ND		ug/l	1.5	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.5	--	1
Tetrachloroethene	1.1		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	1.5	--	1
1,1,1-Trichloroethane	ND		ug/l	2.0	--	1
Benzene	ND		ug/l	1.0	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	5.0	--	1
1,3-Dichlorobenzene	ND		ug/l	5.0	--	1
1,4-Dichlorobenzene	ND		ug/l	5.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
Acetone	ND		ug/l	10	--	1
Methyl tert butyl ether	ND		ug/l	10	--	1
Tert-Butyl Alcohol	ND		ug/l	100	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	1

Project Name: 180 3RD AVENUE **Lab Number:** L2107243

Project Number: 4331.00 **Report Date:** 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01 Date Collected: 02/15/21 11:34

Client ID: SH-201W Date Received: 02/15/21

Sample Location: 180 3RD AVE. WALTHAM Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	89		60-140
Fluorobenzene	89		60-140
4-Bromofluorobenzene	92		60-140

Project Name: 180 3RD AVENUE
Lab Number: L2107243
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1-SIM
Analytical Date: 02/16/21 09:21
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	95		60-140
4-Bromofluorobenzene	106		60-140

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 02/17/21 18:50
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 02/17/21 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	B
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	1	B
1,2,3-Trichloropropane	ND		ug/l	0.029	--	1	B

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 02/16/21 10:00
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethane	ND		ug/l	1.5	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.5	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	1.5	--	1
1,1,1-Trichloroethane	ND		ug/l	2.0	--	1
Benzene	ND		ug/l	1.0	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	5.0	--	1
1,3-Dichlorobenzene	ND		ug/l	5.0	--	1
1,4-Dichlorobenzene	ND		ug/l	5.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
Acetone	ND		ug/l	10	--	1
Methyl tert butyl ether	ND		ug/l	10	--	1
Tert-Butyl Alcohol	ND		ug/l	100	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	1

Project Name: 180 3RD AVENUE
Lab Number: L2107243
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	88		60-140
Fluorobenzene	87		60-140
4-Bromofluorobenzene	94		60-140

Project Name: 180 3RD AVENUE
Lab Number: L2107243
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1-SIM
Analytical Date: 02/16/21 10:00
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	94		60-140
4-Bromofluorobenzene	107		60-140

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 14,504.1
Analytical Date: 02/17/21 18:55
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 02/17/21 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	--	1	B
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	1	B
1,2,3-Trichloropropane	ND		ug/l	0.029	--	1	B

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 02/16/21 06:08
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1465232-4					
Methylene chloride	ND		ug/l	1.0	--
1,1-Dichloroethane	ND		ug/l	1.5	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.5	--
Tetrachloroethene	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	1.5	--
1,1,1-Trichloroethane	ND		ug/l	2.0	--
Benzene	ND		ug/l	1.0	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--
1,2-Dichlorobenzene	ND		ug/l	5.0	--
1,3-Dichlorobenzene	ND		ug/l	5.0	--
1,4-Dichlorobenzene	ND		ug/l	5.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
Acetone	ND		ug/l	10	--
Methyl tert butyl ether	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	100	--
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 02/16/21 06:08
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1465232-4					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	88		60-140
Fluorobenzene	88		60-140
4-Bromofluorobenzene	94		60-140

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1-SIM
Analytical Date: 02/16/21 06:08
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02 Batch: WG1465248-4					
1,4-Dioxane	ND		ug/l	50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	94		60-140
4-Bromofluorobenzene	107		60-140

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 14,504.1
Analytical Date: 02/17/21 18:35
Analyst: AMM

Extraction Method: EPA 504.1
Extraction Date: 02/17/21 16:06

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01-02 Batch: WG1465722-1						
1,2-Dibromoethane	ND		ug/l	0.010	--	B
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	--	B
1,2,3-Trichloropropane	ND		ug/l	0.030	--	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1465232-3								
Methylene chloride	105		-		60-140	-		28
1,1-Dichloroethane	90		-		50-150	-		49
Carbon tetrachloride	110		-		70-130	-		41
1,1,2-Trichloroethane	110		-		70-130	-		45
Tetrachloroethene	115		-		70-130	-		39
1,2-Dichloroethane	105		-		70-130	-		49
1,1,1-Trichloroethane	110		-		70-130	-		36
Benzene	95		-		65-135	-		61
Toluene	110		-		70-130	-		41
Ethylbenzene	100		-		60-140	-		63
Vinyl chloride	75		-		5-195	-		66
1,1-Dichloroethene	95		-		50-150	-		32
cis-1,2-Dichloroethene	100		-		60-140	-		30
Trichloroethene	90		-		65-135	-		48
1,2-Dichlorobenzene	95		-		65-135	-		57
1,3-Dichlorobenzene	95		-		70-130	-		43
1,4-Dichlorobenzene	90		-		65-135	-		57
p/m-Xylene	98		-		60-140	-		30
o-xylene	95		-		60-140	-		30
Acetone	104		-		40-160	-		30
Methyl tert butyl ether	95		-		60-140	-		30
Tert-Butyl Alcohol	140		-		60-140	-		30
Tertiary-Amyl Methyl Ether	90		-		60-140	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1465232-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	92				60-140
Fluorobenzene	90				60-140
4-Bromofluorobenzene	96				60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG1465248-3								
1,4-Dioxane	**150**	Q	-		60-140	-		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Fluorobenzene	96				60-140
4-Bromofluorobenzene	114				60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab	Associated sample(s): 01-02 Batch: WG1465722-2								
1,2-Dibromoethane	95		-		80-120	-			B
1,2-Dibromo-3-chloropropane	103		-		80-120	-			B
1,2,3-Trichloropropane	93		-		80-120	-			B

Matrix Spike Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465722-3 QC Sample: L2107357-02 Client ID: MS Sample													
1,2-Dibromoethane	ND	0.25	0.320	**128**	Q	-	-		80-120	-		20	B
1,2-Dibromo-3-chloropropane	ND	0.25	0.262	105		-	-		80-120	-		20	B
1,2,3-Trichloropropane	ND	0.25	0.258	103		-	-		80-120	-		20	B

SEMIVOLATILES

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1
Analytical Date: 02/17/21 03:56
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--	1
Butyl benzyl phthalate	ND		ug/l	5.00	--	1
Di-n-butylphthalate	ND		ug/l	5.00	--	1
Di-n-octylphthalate	ND		ug/l	5.00	--	1
Diethyl phthalate	ND		ug/l	5.00	--	1
Dimethyl phthalate	ND		ug/l	5.00	--	1
Phenol	ND		ug/l	5.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		25-87
Phenol-d6	38		16-65
Nitrobenzene-d5	75		42-122
2-Fluorobiphenyl	76		46-121
2,4,6-Tribromophenol	95		45-128
4-Terphenyl-d14	84		47-138

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 02/17/21 01:50
Analyst: DV

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.100	--	1
Fluoranthene	ND		ug/l	0.100	--	1
Naphthalene	ND		ug/l	0.100	--	1
Benzo(a)anthracene	ND		ug/l	0.100	--	1
Benzo(a)pyrene	ND		ug/l	0.100	--	1
Benzo(b)fluoranthene	ND		ug/l	0.100	--	1
Benzo(k)fluoranthene	ND		ug/l	0.100	--	1
Chrysene	ND		ug/l	0.100	--	1
Acenaphthylene	ND		ug/l	0.100	--	1
Anthracene	ND		ug/l	0.100	--	1
Benzo(ghi)perylene	ND		ug/l	0.100	--	1
Fluorene	ND		ug/l	0.100	--	1
Phenanthrene	ND		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--	1
Pyrene	ND		ug/l	0.100	--	1
Pentachlorophenol	ND		ug/l	1.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		25-87
Phenol-d6	49		16-65
Nitrobenzene-d5	88		42-122
2-Fluorobiphenyl	96		46-121
2,4,6-Tribromophenol	126		45-128
4-Terphenyl-d14	103		47-138

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1
Analytical Date: 02/17/21 04:19
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--	1
Butyl benzyl phthalate	ND		ug/l	5.00	--	1
Di-n-butylphthalate	ND		ug/l	5.00	--	1
Di-n-octylphthalate	ND		ug/l	5.00	--	1
Diethyl phthalate	ND		ug/l	5.00	--	1
Dimethyl phthalate	ND		ug/l	5.00	--	1
Phenol	ND		ug/l	5.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		25-87
Phenol-d6	42		16-65
Nitrobenzene-d5	85		42-122
2-Fluorobiphenyl	85		46-121
2,4,6-Tribromophenol	101		45-128
4-Terphenyl-d14	90		47-138

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 02/17/21 02:06
Analyst: DV

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.100	--	1
Fluoranthene	ND		ug/l	0.100	--	1
Naphthalene	ND		ug/l	0.100	--	1
Benzo(a)anthracene	ND		ug/l	0.100	--	1
Benzo(a)pyrene	ND		ug/l	0.100	--	1
Benzo(b)fluoranthene	ND		ug/l	0.100	--	1
Benzo(k)fluoranthene	ND		ug/l	0.100	--	1
Chrysene	ND		ug/l	0.100	--	1
Acenaphthylene	ND		ug/l	0.100	--	1
Anthracene	ND		ug/l	0.100	--	1
Benzo(ghi)perylene	ND		ug/l	0.100	--	1
Fluorene	ND		ug/l	0.100	--	1
Phenanthrene	ND		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--	1
Pyrene	ND		ug/l	0.100	--	1
Pentachlorophenol	ND		ug/l	1.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		25-87
Phenol-d6	52		16-65
Nitrobenzene-d5	96		42-122
2-Fluorobiphenyl	101		46-121
2,4,6-Tribromophenol	**134**	Q	45-128
4-Terphenyl-d14	107		47-138

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1
Analytical Date: 02/17/21 03:11
Analyst: SZ

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1465057-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	--
Butyl benzyl phthalate	ND		ug/l	5.00	--
Di-n-butylphthalate	ND		ug/l	5.00	--
Di-n-octylphthalate	ND		ug/l	5.00	--
Diethyl phthalate	ND		ug/l	5.00	--
Dimethyl phthalate	ND		ug/l	5.00	--
Phenol	ND		ug/l	5.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		25-87
Phenol-d6	34		16-65
Nitrobenzene-d5	64		42-122
2-Fluorobiphenyl	67		46-121
2,4,6-Tribromophenol	70		45-128
4-Terphenyl-d14	74		47-138

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1-SIM
Analytical Date: 02/17/21 00:44
Analyst: DV

Extraction Method: EPA 625.1
Extraction Date: 02/15/21 23:43

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02 Batch: WG1465058-1					
Acenaphthene	ND		ug/l	0.100	--
Fluoranthene	ND		ug/l	0.100	--
Naphthalene	ND		ug/l	0.100	--
Benzo(a)anthracene	ND		ug/l	0.100	--
Benzo(a)pyrene	ND		ug/l	0.100	--
Benzo(b)fluoranthene	ND		ug/l	0.100	--
Benzo(k)fluoranthene	ND		ug/l	0.100	--
Chrysene	ND		ug/l	0.100	--
Acenaphthylene	ND		ug/l	0.100	--
Anthracene	ND		ug/l	0.100	--
Benzo(ghi)perylene	ND		ug/l	0.100	--
Fluorene	ND		ug/l	0.100	--
Phenanthrene	ND		ug/l	0.100	--
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--
Pyrene	ND		ug/l	0.100	--
Pentachlorophenol	ND		ug/l	1.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-87
Phenol-d6	44		16-65
Nitrobenzene-d5	69		42-122
2-Fluorobiphenyl	84		46-121
2,4,6-Tribromophenol	95		45-128
4-Terphenyl-d14	95		47-138

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1465057-2								
Bis(2-ethylhexyl)phthalate	90		-		29-137	-		82
Butyl benzyl phthalate	87		-		1-140	-		60
Di-n-butylphthalate	81		-		8-120	-		47
Di-n-octylphthalate	91		-		19-132	-		69
Diethyl phthalate	77		-		1-120	-		100
Dimethyl phthalate	80		-		1-120	-		183
Phenol	44		-		17-120	-		64

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	57				25-87
Phenol-d6	42				16-65
Nitrobenzene-d5	75				42-122
2-Fluorobiphenyl	74				46-121
2,4,6-Tribromophenol	90				45-128
4-Terphenyl-d14	79				47-138

Lab Control Sample Analysis
Batch Quality Control

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG1465058-2								
Acenaphthene	90		-		60-132	-		30
Fluoranthene	96		-		43-121	-		30
Naphthalene	82		-		36-120	-		30
Benzo(a)anthracene	95		-		42-133	-		30
Benzo(a)pyrene	85		-		32-148	-		30
Benzo(b)fluoranthene	98		-		42-140	-		30
Benzo(k)fluoranthene	94		-		25-146	-		30
Chrysene	94		-		44-140	-		30
Acenaphthylene	94		-		54-126	-		30
Anthracene	93		-		43-120	-		30
Benzo(ghi)perylene	68		-		1-195	-		30
Fluorene	89		-		70-120	-		30
Phenanthrene	88		-		65-120	-		30
Dibenzo(a,h)anthracene	84		-		1-200	-		30
Indeno(1,2,3-cd)pyrene	76		-		1-151	-		30
Pyrene	95		-		70-120	-		30
Pentachlorophenol	65		-		38-152	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG1465058-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	59				25-87
Phenol-d6	46				16-65
Nitrobenzene-d5	84				42-122
2-Fluorobiphenyl	90				46-121
2,4,6-Tribromophenol	116				45-128
4-Terphenyl-d14	102				47-138

PCBS

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 02/16/21 15:19
Analyst: JM

Extraction Method: EPA 608.3
Extraction Date: 02/16/21 02:11
Cleanup Method: EPA 3665A
Cleanup Date: 02/16/21
Cleanup Method: EPA 3660B
Cleanup Date: 02/16/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	--	1	A
Aroclor 1221	ND		ug/l	0.250	--	1	A
Aroclor 1232	ND		ug/l	0.250	--	1	A
Aroclor 1242	ND		ug/l	0.250	--	1	A
Aroclor 1248	ND		ug/l	0.250	--	1	A
Aroclor 1254	ND		ug/l	0.250	--	1	A
Aroclor 1260	ND		ug/l	0.200	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		37-123	B
Decachlorobiphenyl	77		38-114	B
2,4,5,6-Tetrachloro-m-xylene	71		37-123	A
Decachlorobiphenyl	66		38-114	A

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 127,608.3
Analytical Date: 02/16/21 15:26
Analyst: JM

Extraction Method: EPA 608.3
Extraction Date: 02/16/21 02:11
Cleanup Method: EPA 3665A
Cleanup Date: 02/16/21
Cleanup Method: EPA 3660B
Cleanup Date: 02/16/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	--	1	A
Aroclor 1221	ND		ug/l	0.250	--	1	A
Aroclor 1232	ND		ug/l	0.250	--	1	A
Aroclor 1242	ND		ug/l	0.250	--	1	A
Aroclor 1248	ND		ug/l	0.250	--	1	A
Aroclor 1254	ND		ug/l	0.250	--	1	A
Aroclor 1260	ND		ug/l	0.200	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		37-123	B
Decachlorobiphenyl	48		38-114	B
2,4,5,6-Tetrachloro-m-xylene	63		37-123	A
Decachlorobiphenyl	41		38-114	A

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 127,608.3
Analytical Date: 02/16/21 14:34
Analyst: JM

Extraction Method: EPA 608.3
Extraction Date: 02/16/21 02:11
Cleanup Method: EPA 3665A
Cleanup Date: 02/16/21
Cleanup Method: EPA 3660B
Cleanup Date: 02/16/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-02 Batch: WG1465081-1						
Aroclor 1016	ND		ug/l	0.250	--	A
Aroclor 1221	ND		ug/l	0.250	--	A
Aroclor 1232	ND		ug/l	0.250	--	A
Aroclor 1242	ND		ug/l	0.250	--	A
Aroclor 1248	ND		ug/l	0.250	--	A
Aroclor 1254	ND		ug/l	0.250	--	A
Aroclor 1260	ND		ug/l	0.200	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		37-123	B
Decachlorobiphenyl	80		38-114	B
2,4,5,6-Tetrachloro-m-xylene	67		37-123	A
Decachlorobiphenyl	64		38-114	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-02 Batch: WG1465081-2									
Aroclor 1016	66		-		50-140	-		36	A
Aroclor 1260	61		-		8-140	-		38	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70				37-123	B
Decachlorobiphenyl	73				38-114	B
2,4,5,6-Tetrachloro-m-xylene	61				37-123	A
Decachlorobiphenyl	59				38-114	A

METALS

Project Name: 180 3RD AVENUE
Lab Number: L2107243
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Iron, Total	0.104		mg/l	0.050	--	1	02/16/21 15:49	02/17/21 08:31	EPA 3005A	19,200.7	GD
Lead, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	02/16/21 15:53	02/18/21 15:06	EPA 245.1	3,245.1	EW
Nickel, Total	ND		mg/l	0.00200	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	02/16/21 15:49	02/17/21 09:00	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	91.3		mg/l	0.660	NA	1	02/16/21 15:49	02/17/21 08:31	EPA 3005A	19,200.7	GD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		02/17/21 09:00	NA	107,-	

Project Name: 180 3RD AVENUE
Lab Number: L2107243
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM
Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Arsenic, Total	0.00132		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Chromium, Total	0.00247		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Copper, Total	0.00368		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Iron, Total	4.84		mg/l	0.050	--	1	02/16/21 15:49	02/17/21 09:27	EPA 3005A	19,200.7	GD
Lead, Total	0.00142		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Mercury, Total	ND		mg/l	0.00020	--	1	02/16/21 15:53	02/18/21 15:09	EPA 245.1	3,245.1	EW
Nickel, Total	0.00712		mg/l	0.00200	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Zinc, Total	0.02411		mg/l	0.01000	--	1	02/16/21 15:49	02/17/21 09:05	EPA 3005A	3,200.8	AM
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	329		mg/l	0.660	NA	1	02/16/21 15:49	02/17/21 09:27	EPA 3005A	19,200.7	GD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		02/17/21 09:05	NA	107,-	

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1465223-1										
Iron, Total	ND		mg/l	0.050	--	1	02/16/21 15:49	02/17/21 08:08	19,200.7	GD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01-02 Batch: WG1465223-1										
Hardness	ND		mg/l	0.660	NA	1	02/16/21 15:49	02/17/21 08:08	19,200.7	GD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1465227-1										
Antimony, Total	ND		mg/l	0.00400	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Arsenic, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Chromium, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Copper, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Lead, Total	ND		mg/l	0.00100	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Nickel, Total	ND		mg/l	0.00200	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Selenium, Total	ND		mg/l	0.00500	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Silver, Total	ND		mg/l	0.00040	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM
Zinc, Total	ND		mg/l	0.01000	--	1	02/16/21 15:49	02/17/21 08:39	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1465228-1										
Mercury, Total	ND		mg/l	0.00020	--	1	02/16/21 15:53	02/18/21 14:29	3,245.1	EW

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1465223-2								
Iron, Total	99		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 Batch: WG1465223-2								
Hardness	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1465227-2								
Antimony, Total	94		-		85-115	-		
Arsenic, Total	106		-		85-115	-		
Cadmium, Total	104		-		85-115	-		
Chromium, Total	98		-		85-115	-		
Copper, Total	99		-		85-115	-		
Lead, Total	105		-		85-115	-		
Nickel, Total	97		-		85-115	-		
Selenium, Total	108		-		85-115	-		
Silver, Total	97		-		85-115	-		
Zinc, Total	106		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1465228-2								
Mercury, Total	97		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-3 QC Sample: L2107243-01 Client ID: SH-201W												
Iron, Total	0.104	1	1.04	94		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-3 QC Sample: L2107243-01 Client ID: SH-201W												
Hardness	91.3	66.2	152	92		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-7 QC Sample: L2107243-02 Client ID: SH-202W												
Iron, Total	4.84	1	4.76	**0**	Q	-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-7 QC Sample: L2107243-02 Client ID: SH-202W												
Hardness	329	66.2	376	**71**	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465227-3 QC Sample: L2107243-01 Client ID: SH-201W												
Antimony, Total	ND	0.5	0.4602	92		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1237	103		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05183	102		-	-		70-130	-		20
Chromium, Total	ND	0.2	0.1862	93		-	-		70-130	-		20
Copper, Total	ND	0.25	0.2412	96		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5084	100		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.4520	90		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1224	102		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04663	93		-	-		70-130	-		20
Zinc, Total	ND	0.5	0.5137	103		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465228-3 QC Sample: L2106934-01 Client ID: MS Sample												
Mercury, Total	0.00045	0.005	0.00529	97		-	-		70-130	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-4 QC Sample: L2107243-01 Client ID: SH-201W						
Iron, Total	0.104	0.094	mg/l	10		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-4 QC Sample: L2107243-01 Client ID: SH-201W						
Hardness	91.3	91.5	mg/l	0		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-8 QC Sample: L2107243-02 Client ID: SH-202W						
Iron, Total	4.84	4.65	mg/l	4		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465223-8 QC Sample: L2107243-02 Client ID: SH-202W						
Hardness	329	314	mg/l	5		20
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465227-4 QC Sample: L2107243-01 Client ID: SH-201W						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1465228-4 QC Sample: L2106934-01 Client ID: DUP Sample					
Mercury, Total	0.00045	0.00054	mg/l	18	20

INORGANICS
&
MISCELLANEOUS

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-01
Client ID: SH-201W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 11:34
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	6.1		mg/l	5.0	NA	1	-	02/17/21 16:00	121,2540D	AC
Cyanide, Total	ND		mg/l	0.005	--	1	02/16/21 11:30	02/16/21 14:55	121,4500CN-CE	CR
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	02/16/21 08:08	121,4500CL-D	JA
Nitrogen, Ammonia	0.127		mg/l	0.075	--	1	02/16/21 10:00	02/17/21 20:38	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	02/16/21 18:00	02/16/21 19:00	74,1664A	TL
Phenolics, Total	ND		mg/l	0.030	--	1	02/16/21 07:10	02/16/21 10:29	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	--	1	02/16/21 06:32	02/16/21 06:49	1,7196A	AW
Anions by Ion Chromatography - Westborough Lab										
Chloride	466.		mg/l	12.5	--	25	-	02/17/21 21:05	44,300.0	AT

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2107243-02
Client ID: SH-202W
Sample Location: 180 3RD AVE. WALTHAM

Date Collected: 02/15/21 09:50
Date Received: 02/15/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	350		mg/l	25	NA	5	-	02/17/21 13:30	121,2540D	AC
Cyanide, Total	ND		mg/l	0.005	--	1	02/16/21 11:30	02/16/21 14:57	121,4500CN-CE	CR
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	02/16/21 08:08	121,4500CL-D	JA
Nitrogen, Ammonia	ND		mg/l	0.375	--	5	02/16/21 10:00	02/17/21 20:41	121,4500NH3-BH	AT
TPH, SGT-HEM	ND		mg/l	4.00	--	1	02/16/21 18:00	02/16/21 19:00	74,1664A	TL
Phenolics, Total	ND		mg/l	0.030	--	1	02/16/21 07:10	02/16/21 10:30	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	--	1	02/16/21 06:32	02/16/21 06:49	1,7196A	AW
Anions by Ion Chromatography - Westborough Lab										
Chloride	167.		mg/l	12.5	--	25	-	02/17/21 21:16	44,300.0	AT

Project Name: 180 3RD AVENUE
Project Number: 4331.00
Lab Number: L2107243
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465110-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	02/16/21 06:32	02/16/21 06:48	1,7196A	AW
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465113-1										
Phenolics, Total	ND		mg/l	0.030	--	1	02/16/21 07:10	02/16/21 10:26	4,420.1	KP
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465151-1										
Chlorine, Total Residual	ND		mg/l	0.02	--	1	-	02/16/21 08:08	121,4500CL-D	JA
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465161-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	02/16/21 10:00	02/17/21 20:35	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465213-1										
Cyanide, Total	ND		mg/l	0.005	--	1	02/16/21 11:30	02/16/21 14:49	121,4500CN-CE	CR
General Chemistry - Westborough Lab for sample(s): 01-02 Batch: WG1465311-1										
TPH, SGT-HEM	ND		mg/l	4.00	--	1	02/16/21 18:00	02/16/21 19:00	74,1664A	TL
Anions by Ion Chromatography - Westborough Lab for sample(s): 01-02 Batch: WG1465479-1										
Chloride	ND		mg/l	0.500	--	1	-	02/17/21 16:31	44,300.0	AT
General Chemistry - Westborough Lab for sample(s): 02 Batch: WG1465624-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	02/17/21 13:30	121,2540D	AC
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1465628-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	02/17/21 16:00	121,2540D	AC

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465110-2								
Chromium, Hexavalent	109		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465113-2								
Phenolics, Total	110		-		70-130	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465151-2								
Chlorine, Total Residual	108		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465161-2								
Nitrogen, Ammonia	94		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465213-2								
Cyanide, Total	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1465311-2								
TPH	82		-		64-132	-		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-02 Batch: WG1465479-2								
Chloride	102		-		90-110	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE

Project Number: 4331.00

Lab Number: L2107243

Report Date: 05/03/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02 Batch: WG1465624-2					
Solids, Total Suspended	94	-	80-120	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1465628-2					
Solids, Total Suspended	98	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: 180 3RD AVENUE
Project Number: 4331.00

Lab Number: L2107243
Report Date: 05/03/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465110-4 QC Sample: L2107243-01 Client ID: SH-201W												
Chromium, Hexavalent	ND	0.1	0.101	101		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465113-4 QC Sample: L2107243-02 Client ID: SH-202W												
Phenolics, Total	ND	0.4	0.41	103		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465151-4 QC Sample: L2107243-02 Client ID: SH-202W												
Chlorine, Total Residual	ND	0.25	0.20	80		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465161-4 QC Sample: L2107243-01 Client ID: SH-201W												
Nitrogen, Ammonia	0.127	4	3.44	83		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465213-4 QC Sample: L2107243-02 Client ID: SH-202W												
Cyanide, Total	ND	0.2	0.200	100		-	-		90-110	-		30
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465311-4 QC Sample: L2104936-64 Client ID: MS Sample												
TPH	ND	19	15.1	80		-	-		64-132	-		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465479-3 QC Sample: L2107494-03 Client ID: MS Sample												
Chloride	26.1	4	29.3	**78**	Q	-	-		90-110	-		18

Lab Duplicate Analysis

Batch Quality Control

Project Name: 180 3RD AVENUE
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Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465110-3 QC Sample: L2107243-01 Client ID: SH-201W						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465113-3 QC Sample: L2107243-02 Client ID: SH-202W						
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465151-3 QC Sample: L2107243-01 Client ID: SH-201W						
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465161-3 QC Sample: L2107243-01 Client ID: SH-201W						
Nitrogen, Ammonia	0.127	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465213-3 QC Sample: L2107243-01 Client ID: SH-201W						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465311-3 QC Sample: L2104936-63 Client ID: DUP Sample						
TPH	ND	ND	mg/l	NC		34
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1465479-4 QC Sample: L2107494-03 Client ID: DUP Sample						
Chloride	26.1	26.1	mg/l	0		18
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1465624-3 QC Sample: L2106998-01 Client ID: DUP Sample						
Solids, Total Suspended	73	73	mg/l	0		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1465628-3 QC Sample: L2107201-01 Client ID: DUP Sample						
Solids, Total Suspended	56	54	mg/l	4		29

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Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2107243-01A	Vial unpreserved	A	NA		3.8	Y	Absent		SUB-ETHANOL(14)
L2107243-01B	Vial unpreserved	A	NA		3.8	Y	Absent		SUB-ETHANOL(14)
L2107243-01C	Vial unpreserved	A	NA		3.8	Y	Absent		SUB-ETHANOL(14)
L2107243-01D	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01E	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01F	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01G	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01H	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01I	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01J	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01K	Vial Na2S2O3 preserved	A	NA		3.8	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-01L	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		HOLD-METAL-DISSOLVED(180)
L2107243-01M	Plastic 250ml HNO3 preserved	A	<2	<2	3.8	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AG-2008T(180),HG-U(28),AS-2008T(180),SE-2008T(180),PB-2008T(180),CR-2008T(180),SB-2008T(180)
L2107243-01N	Plastic 250ml NaOH preserved	A	>12	>12	3.8	Y	Absent		TCN-4500(14)
L2107243-01O	Plastic 500ml H2SO4 preserved	A	<2	<2	3.8	Y	Absent		NH3-4500(28)
L2107243-01P	Plastic 950ml unpreserved	A	7	7	3.8	Y	Absent		CL-300(28),HEXCR-7196(1),TRC-4500(1)
L2107243-01Q	Plastic 950ml unpreserved	A	7	7	3.8	Y	Absent		TSS-2540(7)
L2107243-01R	Amber 950ml H2SO4 preserved	A	<2	<2	3.8	Y	Absent		TPHENOL-420(28)
L2107243-01S	Amber 1000ml HCl preserved	A	NA		3.8	Y	Absent		TPH-1664(28)
L2107243-01T	Amber 1000ml HCl preserved	A	NA		3.8	Y	Absent		TPH-1664(28)

*Values in parentheses indicate holding time in days

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2107243-01U	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		PCB-608.3(365)
L2107243-01V	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		PCB-608.3(365)
L2107243-01W	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		625.1-RGP(7)
L2107243-01X	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		625.1-RGP(7)
L2107243-01Y	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		625.1-SIM-RGP(7)
L2107243-01Z	Amber 1000ml Na2S2O3	A	7	7	3.8	Y	Absent		625.1-SIM-RGP(7)
L2107243-02A	Vial unpreserved	B	NA		3.2	Y	Absent		SUB-ETHANOL(14)
L2107243-02B	Vial unpreserved	B	NA		3.2	Y	Absent		SUB-ETHANOL(14)
L2107243-02C	Vial unpreserved	B	NA		3.2	Y	Absent		SUB-ETHANOL(14)
L2107243-02D	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02E	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02F	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02G	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02H	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02I	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02J	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02K	Vial Na2S2O3 preserved	B	NA		3.2	Y	Absent		624.1-RGP(7),624.1-SIM-RGP(7),504(14)
L2107243-02L	Plastic 250ml HNO3 preserved	B	<2	<2	3.2	Y	Absent		HOLD-METAL-DISSOLVED(180)
L2107243-02M	Plastic 250ml HNO3 preserved	B	<2	<2	3.2	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),AG-2008T(180),HG-U(28),SE-2008T(180),AS-2008T(180),PB-2008T(180),CR-2008T(180),SB-2008T(180)
L2107243-02N	Plastic 250ml NaOH preserved	B	>12	>12	3.2	Y	Absent		TCN-4500(14)
L2107243-02O	Plastic 500ml H2SO4 preserved	B	<2	<2	3.2	Y	Absent		NH3-4500(28)
L2107243-02P	Plastic 950ml unpreserved	B	7	7	3.2	Y	Absent		HEXCR-7196(1),CL-300(28),TRC-4500(1)
L2107243-02Q	Plastic 950ml unpreserved	B	7	7	3.2	Y	Absent		TSS-2540(7)
L2107243-02R	Amber 950ml H2SO4 preserved	B	<2	<2	3.2	Y	Absent		TPHENOL-420(28)
L2107243-02S	Amber 1000ml HCl preserved	B	NA		3.2	Y	Absent		TPH-1664(28)
L2107243-02T	Amber 1000ml Na2S2O3	B	7	7	3.2	Y	Absent		PCB-608.3(365)

*Values in parentheses indicate holding time in days

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2107243-02U	Amber 1000ml Na2S2O3	B	7	7	3.2	Y	Absent		625.1-RGP(7)
L2107243-02V	Amber 1000ml Na2S2O3	B	7	7	3.2	Y	Absent		625.1-SIM-RGP(7)

*Values in parentheses indicate holding time in days

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GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

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Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

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REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

74 Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

107 Alpha Analytical - In-house calculation method.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

127 Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD, EPA 821-R-16-009, December 2016.

128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 2/15/21

ALPHA Job #: L2107243

ALPHA ANALYTICAL
Boston Class Chemistry
8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220
320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Sanborn Head
Address: 1 technology Park Dr.
Westford, MA
Phone: 978-392-0900
Email: asantamaria@sanbornhead.com

Project Information

Project Name: 180 3rd Avenue
Project Location: 180 3rd Ave. Waltham, MA
Project #: 4331.00
Project Manager: Americo Santamaria
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☒ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	NPDES RGP	NPDES RGP Metals Dissolved	Sample Comments	TOTAL # BOTTLES
07243 -01	SH-201W	2/15/21	11:34	GW	LAA									X	H	H=Hold	26
-02	SH-202W	2/15/21	09:50	GW	LAA									X	H	H=Hold	22

SAMPLE INFO
Filtration
☒ Field
☐ Lab to do
Preservation
☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Container Type																	
Preservative																	

Relinquished By:	Date/Time	Received By:	Date/Time
Rob Maestro	2/15/21 15:08	Rob Maestro AAL	2/15/21 15:08
	2/15/21 1920		2/15/21 1920

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ALPHA ANALYTICAL
World Class Chemistry

Subcontract Chain of Custody

Tek Lab, Inc.
5445 Horsehoe Lake Road
Collinsville, IL 62234-7425

Alpha Job Number
L2107243

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 508-439-5132
Email: akane@alphalab.com

Project Information

Project Location: MA
Project Manager: Ashaley Kane

Turnaround & Deliverables Information

Due Date:
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:
Regulatory Criteria:

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L2107243

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
	SH-201W	02-15-21 11:34	WATER	Ethanol by EPA 1671 Revision A	
	SH-202W	02-15-21 09:50	WATER	Ethanol by EPA 1671 Revision A	

	Relinquished By:	Date/Time:	Received By:	Date/Time:
		2/16/21		
Form No: AL_subcoc				

Teklab, Inc.
Environmental Laboratory

http://www.teklabinc.com/

February 22, 2021

Ashaley Kane
Alpha Analytical
145 Flanders Road
Westborough, MA 01581
TEL: (508) 439-5132
FAX:

Illinois	100226
Kansas	E-10374
Louisiana	05002
Louisiana	05003
Oklahoma	9978

RE: L2107243 **WorkOrder:** 21020877

Dear Ashaley Kane:

TEKLAB, INC received 2 samples on 2/17/2021 3:30:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Teklab, Inc.
Environmental Laboratory

Report Contents

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2107243

Work Order: 21020877
Report Date: 22-Feb-21

This reporting package includes the following:

Teklab, Inc.
Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical **Work Order:** 21020877

Client Project: L2107243 **Report Date:** 22-Feb-21

Abbr	Definition
*	Analytes on report marked with an asterisk are not NELAP accredited
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
CRQL	A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.
DNI	Did not ignite
DUP	Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample is a sample matrix, free from the analytes of interest,spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MBLK	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	"The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
NC	Data is not acceptable for compliance purposes
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TIC	Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"
TNTC	Too numerous to count (> 200 CFU)

Teklab, Inc. Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Alpha Analytical

Work Order: 21020877

Client Project: L2107243

Report Date: 22-Feb-21

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
C -	RL shown is a Client Requested Quantitation Limit	E -	Value above quantitation range
H -	Holding times exceeded	I -	Associated internal standard was outside method criteria
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	T -	TIC(Tentatively identified compound)
X -	Value exceeds Maximum Contaminant Level		

Teklab, Inc. Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Alpha Analytical

Client Project: L2107243

Work Order: 21020877

Report Date: 22-Feb-21

Cooler Receipt Temp: 0.6 °C

Locations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email jhriley@teklabinc.com

Collinsville Air

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email EHurley@teklabinc.com

Chicago

Address 1319 Butterfield Rd.
Downers Grove, IL 60515
Phone (630) 324-6855
Fax
Email arenner@teklabinc.com

Teklab, Inc. Environmental Laboratory

Accreditations

http://www.teklabinc.com/

Client: Alpha Analytical

Client Project: L2107243

Work Order: 21020877

Report Date: 22-Feb-21

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2022	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2021	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2021	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2021	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2021	Collinsville
Arkansas	ADEQ	88-0966		3/14/2021	Collinsville
Illinois	IDPH	17584		5/31/2021	Collinsville
Kentucky	UST	0073		1/31/2022	Collinsville
Missouri	MDNR	00930		5/31/2021	Collinsville
Missouri	MDNR	930		1/31/2022	Collinsville

Teklab, Inc. Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21020877
Client Project: L2107243
Report Date: 22-Feb-21
Lab ID: 21020877-001
Client Sample ID: SH-201W
Matrix: AQUEOUS
Collection Date: 02/15/2021 11:34

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS								
Ethanol	*	20		**ND**	mg/L	1	02/18/2021 14:45	R287590

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Alpha Analytical
Work Order: 21020877
Client Project: L2107243
Report Date: 22-Feb-21
Lab ID: 21020877-002
Client Sample ID: SH-202W
Matrix: AQUEOUS
Collection Date: 02/15/2021 9:50

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS								
Ethanol	*	20		**ND**	mg/L	1	02/18/2021 15:23	R287590

Teklab, Inc. Environmental Laboratory

Quality Control Results

http://www.teklabinc.com/

Client: Alpha Analytical **Work Order:** 21020877

Client Project: L2107243 **Report Date:** 22-Feb-21

EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE OR

Batch R287590 **SampType:** MBLK Units **mg/L**

SampID: MBLK-021821

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**ND**						02/18/2021

Batch R287590 **SampType:** LCS Units **mg/L**

SampID: LCS-021821

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**260**	250.0	0	102.5	70	132	02/18/2021

Batch R287590 **SampType:** MS Units **mg/L**

SampID: 21020877-002AMS

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Ethanol	*	20		**260**	250.0	0	105.7	70	132	02/18/2021

Batch R287590 **SampType:** MSD Units **mg/L** RPD Limit **30**

SampID: 21020877-002AMSD

Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Ethanol	*	20		**240**	250.0	0	96.0	264.3	9.67	02/18/2021

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Alpha Analytical
Client Project: L2107243

Work Order: 21020877
Report Date: 22-Feb-21

Carrier: UPS

Received By: MEK

Completed by: Mary E. Kemp
On: 17-Feb-21
Mary E. Kemp

Reviewed by: Elizabeth A. Hurley
On: 17-Feb-21
Elizabeth A. Hurley

Pages to follow: Chain of custody [1] Extra pages included [0]

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C **0.6**
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☑	No ☐	No VOA vials ☐
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

Subcontract Chain of Custody

Tek Lab, Inc.
5445 Horsehoe Lake Road
Collinsville, IL 62234-7425

Alpha Job Number
L2107243

Client Information

Client: Alpha Analytical Labs
Address: Eight Walkup Drive
Westborough, MA 01581-1019

Phone: 508-439-5132
Email: akane@alphalab.com

Project Information

Project Location: MA
Project Manager: Ashaley Kane

Turnaround & Deliverables Information

Due Date:
Deliverables:

Regulatory Requirements/Report Limits

State/Federal Program:

Regulatory Criteria:

Project Specific Requirements and/or Report Requirements

Reference following Alpha Job Number on final report/deliverables: L2107243

Report to include Method Blank, LCS/LCSD:

Additional Comments: Send all results/reports to subreports@alphalab.com

Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
L2107243-001 ↓ 002	SH-201W SH-202W	02-15-21 11:34 02-15-21 09:50	WATER WATER	Ethanol by EPA 1671 Revision A Ethanol by EPA 1671 Revision A	

	Relinquished By:	Date/Time:	Received By:	Date/Time:
		2/16/21	Mary Kemp (UPS)	2/17/21 1530
Form No: AL_subcoc				

0.6 ICE
LTG S
ØHS MEK 2/17/21

ANALYTICAL REPORT

Lab Number:	L2122411
Client:	Sanborn, Head & Associates, Inc. 1 Technology Park Drive Westford, MA 01886
ATTN:	Americo Santamaria
Phone:	(978) 577-1040
Project Name:	180 THIRD AVE.
Project Number:	4331.00
Report Date:	05/03/21

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2122411-01	2021-04-30-EFF	WATER	WALTHAM, MA	04/30/21 10:30	04/30/21

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

Case Narrative (continued)

Sample Receipt

L2122411-01: Additional sample containers were received for the "2021-04-30-EFF" sample, but were not listed on the chain of custody. At the client's request, the analyses performed were specified on the chain of custody.

Anions by Ion Chromatography

WG1493457: A Matrix Spike and Laboratory Duplicate were prepared with the sample batch, however, the native sample was not available for reporting; therefore, the results could not be reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Lisa Westerlind

Title: Technical Director/Representative Date: 05/03/21

ORGANICS

SEMIVOLATILES

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2122411-01
Client ID: 2021-04-30-EFF
Sample Location: WALTHAM, MA

Date Collected: 04/30/21 10:30
Date Received: 04/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 129,625.1-SIM
Analytical Date: 05/03/21 09:11
Analyst: ALS

Extraction Method: EPA 625.1
Extraction Date: 04/30/21 22:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Benzo(a)anthracene	0.923		ug/l	0.100	--	1
Benzo(a)pyrene	1.26		ug/l	0.100	--	1
Benzo(b)fluoranthene	2.55		ug/l	0.100	--	1
Benzo(k)fluoranthene	0.898		ug/l	0.100	--	1
Chrysene	1.97		ug/l	0.100	--	1
Dibenzo(a,h)anthracene	0.256		ug/l	0.100	--	1
Indeno(1,2,3-cd)pyrene	1.41		ug/l	0.100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		42-122
2-Fluorobiphenyl	79		46-121
4-Terphenyl-d14	76		47-138

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 129,625.1-SIM
Analytical Date: 05/03/21 08:55
Analyst: ALS

Extraction Method: EPA 625.1
Extraction Date: 04/30/21 20:22

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1493086-1					
Benzo(a)anthracene	ND		ug/l	0.100	--
Benzo(a)pyrene	ND		ug/l	0.100	--
Benzo(b)fluoranthene	ND		ug/l	0.100	--
Benzo(k)fluoranthene	ND		ug/l	0.100	--
Chrysene	ND		ug/l	0.100	--
Dibenzo(a,h)anthracene	ND		ug/l	0.100	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	43		25-87
Phenol-d6	30		16-65
Nitrobenzene-d5	71		42-122
2-Fluorobiphenyl	74		46-121
2,4,6-Tribromophenol	77		45-128
4-Terphenyl-d14	76		47-138

Lab Control Sample Analysis
Batch Quality Control

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1493086-2								
Benzo(a)anthracene	84		-		42-133	-		30
Benzo(a)pyrene	86		-		32-148	-		30
Benzo(b)fluoranthene	87		-		42-140	-		30
Benzo(k)fluoranthene	90		-		25-146	-		30
Chrysene	87		-		44-140	-		30
Dibenzo(a,h)anthracene	88		-		1-200	-		30
Indeno(1,2,3-cd)pyrene	90		-		1-151	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	47				25-87
Phenol-d6	34				16-65
Nitrobenzene-d5	71				42-122
2-Fluorobiphenyl	76				46-121
2,4,6-Tribromophenol	84				45-128
4-Terphenyl-d14	79				47-138

METALS

Project Name: 180 THIRD AVE.
Lab Number: L2122411
Project Number: 4331.00
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2122411-01
Client ID: 2021-04-30-EFF
Sample Location: WALTHAM, MA
Date Collected: 04/30/21 10:30
Date Received: 04/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.00400	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00020	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Chromium, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Copper, Total	0.00392		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Iron, Total	0.176		mg/l	0.050	--	1	05/03/21 09:58	05/03/21 14:02	EPA 3005A	19,200.7	GD
Lead, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Mercury, Total	ND		mg/l	0.00020	--	1	05/03/21 10:03	05/03/21 12:47	EPA 245.1	3,245.1	OU
Nickel, Total	ND		mg/l	0.00200	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Selenium, Total	ND		mg/l	0.00500	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Silver, Total	ND		mg/l	0.00040	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Zinc, Total	0.03368		mg/l	0.01000	--	1	05/03/21 09:58	05/03/21 15:35	EPA 3005A	3,200.8	CD
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	106		mg/l	0.660	NA	1	05/03/21 09:58	05/03/21 14:02	EPA 3005A	19,200.7	GD
General Chemistry - Mansfield Lab											
Chromium, Trivalent	ND		mg/l	0.010	--	1		05/03/21 15:35	NA	107,-	

Project Name: 180 THIRD AVE. **Lab Number:** L2122411

Project Number: 4331.00 **Report Date:** 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1493557-1										
Iron, Total	ND		mg/l	0.050	--	1	05/03/21 09:58	05/03/21 13:37	19,200.7	GD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1493557-1										
Hardness	ND		mg/l	0.660	NA	1	05/03/21 09:58	05/03/21 13:37	19,200.7	GD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1493559-1										
Antimony, Total	ND		mg/l	0.00400	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Arsenic, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00020	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Chromium, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Copper, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Lead, Total	ND		mg/l	0.00100	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Nickel, Total	ND		mg/l	0.00200	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Selenium, Total	ND		mg/l	0.00500	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Silver, Total	ND		mg/l	0.00040	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD
Zinc, Total	ND		mg/l	0.01000	--	1	05/03/21 09:58	05/03/21 15:15	3,200.8	CD

Prep Information

Digestion Method: EPA 3005A

Project Name: 180 THIRD AVE.
Project Number: 4331.00
Lab Number: L2122411
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1493560-1										
Mercury, Total	ND		mg/l	0.00020	--	1	05/03/21 10:03	05/03/21 12:24	3,245.1	OU

Prep Information

Digestion Method: EPA 245.1

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 THIRD AVE.

Project Number: 4331.00

Lab Number: L2122411

Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1493557-2								
Iron, Total	91		-		85-115	-		
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1493557-2								
Hardness	101		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1493559-2								
Antimony, Total	85		-		85-115	-		
Arsenic, Total	106		-		85-115	-		
Cadmium, Total	105		-		85-115	-		
Chromium, Total	93		-		85-115	-		
Copper, Total	96		-		85-115	-		
Lead, Total	98		-		85-115	-		
Nickel, Total	93		-		85-115	-		
Selenium, Total	108		-		85-115	-		
Silver, Total	97		-		85-115	-		
Zinc, Total	108		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1493560-2								
Mercury, Total	93		-		85-115	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493557-3 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF												
Iron, Total	0.176	1	1.03	85		-	-		75-125	-		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493557-3 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF												
Hardness	106	66.2	171	98		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493559-3 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF												
Antimony, Total	ND	0.5	0.4546	91		-	-		70-130	-		20
Arsenic, Total	ND	0.12	0.1257	105		-	-		70-130	-		20
Cadmium, Total	ND	0.051	0.05379	105		-	-		70-130	-		20
Chromium, Total	ND	0.2	0.1867	93		-	-		70-130	-		20
Copper, Total	0.00392	0.25	0.2416	95		-	-		70-130	-		20
Lead, Total	ND	0.51	0.5117	100		-	-		70-130	-		20
Nickel, Total	ND	0.5	0.4577	92		-	-		70-130	-		20
Selenium, Total	ND	0.12	0.1328	111		-	-		70-130	-		20
Silver, Total	ND	0.05	0.04863	97		-	-		70-130	-		20
Zinc, Total	0.03368	0.5	0.5681	107		-	-		70-130	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493560-3 QC Sample: L2122344-01 Client ID: MS Sample												
Mercury, Total	ND	0.005	0.00454	91		-	-		70-130	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493557-4 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF						
Iron, Total	0.176	0.169	mg/l	4		20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493557-4 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF						
Hardness	106	105	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493559-4 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF						
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00392	0.00400	mg/l	2		20
Lead, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.03368	0.03427	mg/l	2		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1493560-4 QC Sample: L2122344-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

SAMPLE RESULTS

Lab ID: L2122411-01
Client ID: 2021-04-30-EFF
Sample Location: WALTHAM, MA

Date Collected: 04/30/21 10:30
Date Received: 04/30/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/03/21 09:45	121,2540D	AC
Cyanide, Total	ND		mg/l	0.005	--	1	05/01/21 13:30	05/03/21 10:41	121,4500CN-CE	CR
pH (H)	6.8		SU	-	NA	1	-	05/01/21 08:35	121,4500H+-B	MR
Nitrogen, Ammonia	0.163		mg/l	0.075	--	1	04/30/21 17:00	05/02/21 17:01	121,4500NH3-BH	JO
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/30/21 21:30	04/30/21 22:09	1,7196A	AS
Anions by Ion Chromatography - Westborough Lab										
Chloride	338.		mg/l	12.5	--	25	-	05/02/21 12:15	44,300.0	SH

Project Name: 180 THIRD AVE.
Project Number: 4331.00
Lab Number: L2122411
Report Date: 05/03/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1493045-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	04/30/21 17:00	05/02/21 16:46	121,4500NH3-BH	JO
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1493098-1										
Chromium, Hexavalent	ND		mg/l	0.010	--	1	04/30/21 21:30	04/30/21 22:07	1,7196A	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1493278-1										
Cyanide, Total	ND		mg/l	0.005	--	1	05/01/21 13:30	05/03/21 09:52	121,4500CN-CE	CR
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1493457-1										
Chloride	ND		mg/l	0.500	--	1	-	05/02/21 11:10	44,300.0	SH
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1493628-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	05/03/21 09:45	121,2540D	AC

Lab Control Sample Analysis

Batch Quality Control

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1493045-2								
Nitrogen, Ammonia	98		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1493098-2								
Chromium, Hexavalent	100		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1493183-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1493278-2								
Cyanide, Total	99		-		90-110	-		
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1493457-2								
Chloride	99		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1493628-2								
Solids, Total Suspended	95		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493045-4 QC Sample: L2116521-203 Client ID: MS Sample												
Nitrogen, Ammonia	0.315	4	4.14	96		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493098-4 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF												
Chromium, Hexavalent	ND	0.1	0.101	101		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493278-4 QC Sample: L2120431-01 Client ID: MS Sample												
Cyanide, Total	ND	0.2	0.194	97		-	-		90-110	-		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: 180 THIRD AVE.

Project Number: 4331.00

Lab Number: L2122411

Report Date: 05/03/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493045-3 QC Sample: L2116521-203 Client ID: DUP Sample						
Nitrogen, Ammonia	0.315	0.385	mg/l	20		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493098-3 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493183-2 QC Sample: L2122411-01 Client ID: 2021-04-30-EFF						
pH (H)	6.8	6.8	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493278-3 QC Sample: L2120431-01 Client ID: DUP Sample						
Cyanide, Total	ND	ND	mg/l	NC		30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1493628-3 QC Sample: L2121779-01 Client ID: DUP Sample						
Solids, Total Suspended	14	16	mg/l	13		29

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2122411-01A	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01B	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01C	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01D	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01E	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01F	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-624(7)
L2122411-01G	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-504/8011(14)
L2122411-01H	Vial Na2S2O3 preserved	A	NA		2.0	Y	Absent		HOLD-504/8011(14)
L2122411-01I	Vial unpreserved	A	NA		2.0	Y	Absent		ARCHIVE()
L2122411-01J	Vial unpreserved	A	NA		2.0	Y	Absent		ARCHIVE()
L2122411-01K	Vial unpreserved	A	NA		2.0	Y	Absent		ARCHIVE()
L2122411-01L	Plastic 250ml NaOH preserved	A	>12	>12	2.0	Y	Absent		TCN-4500(14)
L2122411-01M	Plastic 250ml HNO3 preserved	A	<2	<2	2.0	Y	Absent		CD-2008T(180),NI-2008T(180),ZN-2008T(180),CU-2008T(180),FE-UI(180),HARDU(180),AG-2008T(180),HG-U(28),AS-2008T(180),SE-2008T(180),PB-2008T(180),SB-2008T(180),CR-2008T(180)
L2122411-01N	Plastic 500ml H2SO4 preserved	A	<2	<2	2.0	Y	Absent		NH3-4500(28)
L2122411-01O	Plastic 950ml unpreserved	A	7	7	2.0	Y	Absent		CL-300(28),HEXCR-7196(1),PH-4500(.01)
L2122411-01P	Plastic 950ml unpreserved	A	7	7	2.0	Y	Absent		TSS-2540(7)
L2122411-01Q	Amber 950ml H2SO4 preserved	A	<2	<2	2.0	Y	Absent		HOLD-WETCHEM()
L2122411-01R	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)
L2122411-01S	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)
L2122411-01T	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)
L2122411-01U	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)

*Values in parentheses indicate holding time in days

Project Name: 180 THIRD AVE.
Project Number: 4331.00

Lab Number: L2122411
Report Date: 05/03/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2122411-01V	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)
L2122411-01W	Amber 1000ml Na2S2O3	A	7	7	2.0	Y	Absent		625.1-SIM-RGP(7)
L2122411-01X	Amber 1000ml HCl preserved	A	N/A	N/A	2.0	Y	Absent		HOLD-WETCHEM()
L2122411-01Y	Amber 1000ml HCl preserved	A	N/A	N/A	2.0	Y	Absent		HOLD-WETCHEM()

*Values in parentheses indicate holding time in days

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	180 THIRD AVE.	**Lab Number:**	L2122411
Project Number:	4331.00	**Report Date:**	05/03/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.

107 Alpha Analytical - In-house calculation method.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 4/30/21

ALPHA Job #: L2122411

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Sanborn, Head & Associates
Address: 1 Technology Park Drive
Westford MA 01886
Phone: (978)-392-0900
Email: asantamaria@sanbornhead.com

Project Information

Project Name: 180 Third Ave
Project Location: Waltham, MA
Project #: 4331.00
Project Manager: America Santamaria
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved)
Date Due: 1 DAY TAT (24-hr)

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☒ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Additional Project Information:

- Must meet NPES RGP criteria
- For 625.1 SIM and total metals, only report analytes listed on the attached "RGP System sampling" sheet

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	TSS, pH, Hardness	Total Metals	Chloride, Ammonia	Hex and Trivalent Chromium	625.1 SIM	Cyanide	SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	Sample Comments	TOTAL # BOTTLES
22411-01	2021-04-30-EFF	4/30/21	10:30	FE	LCM									✓	✓	✓	✓	✓	✓		See notes	

Container Type																						
Preservative																						

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	4/30/21 13:05	DAVSAM	4-30-21 13:05
DAVSAM	4-30-21 16:55		4/30/21 1655

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

SANBORN HEAD
Building Trust. Engineering Success.

98 N. Washington Street, Suite 101
Boston, MA 02114

RGP System Sampling
Permit-Specific Analyte List
180 3rd Ave
Waltham, Massachusetts

For Metals analysis, only report the following compounds:

Antimony
Arsenic
Cadmium
Trivalent Chromium (laboratory calculated)
Hexavalent Chromium
Copper
Iron
Lead
Mercury
Nickel
Selenium
Silver
Zinc

For SVOC (625.1-SIM) analysis, only report the following compounds:

Total Group I Polycyclic Aromatic Hydrocarbons
Benzo(a)anthracene

\\bosserv1\SHDATA\SHDATA\4500s\4511.00\Work\01_Construction\07_RGP Sampling\20201004 Updated RGP Specific Analytes .docx

APPENDIX E

FEDERAL CORRESPONDENCE

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: April 29, 2021
Consultation Code: 05E1NE00-2021-SLI-2801
Event Code: 05E1NE00-2021-E-08636
Project Name: 180 Third Ave

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-2801
Event Code: 05E1NE00-2021-E-08636
Project Name: 180 Third Ave
Project Type: DEVELOPMENT
Project Description: 180 Third Ave, Waltham, Massachusetts
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.39140775,-71.26066714047766,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

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

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

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

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

---

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

Mammals

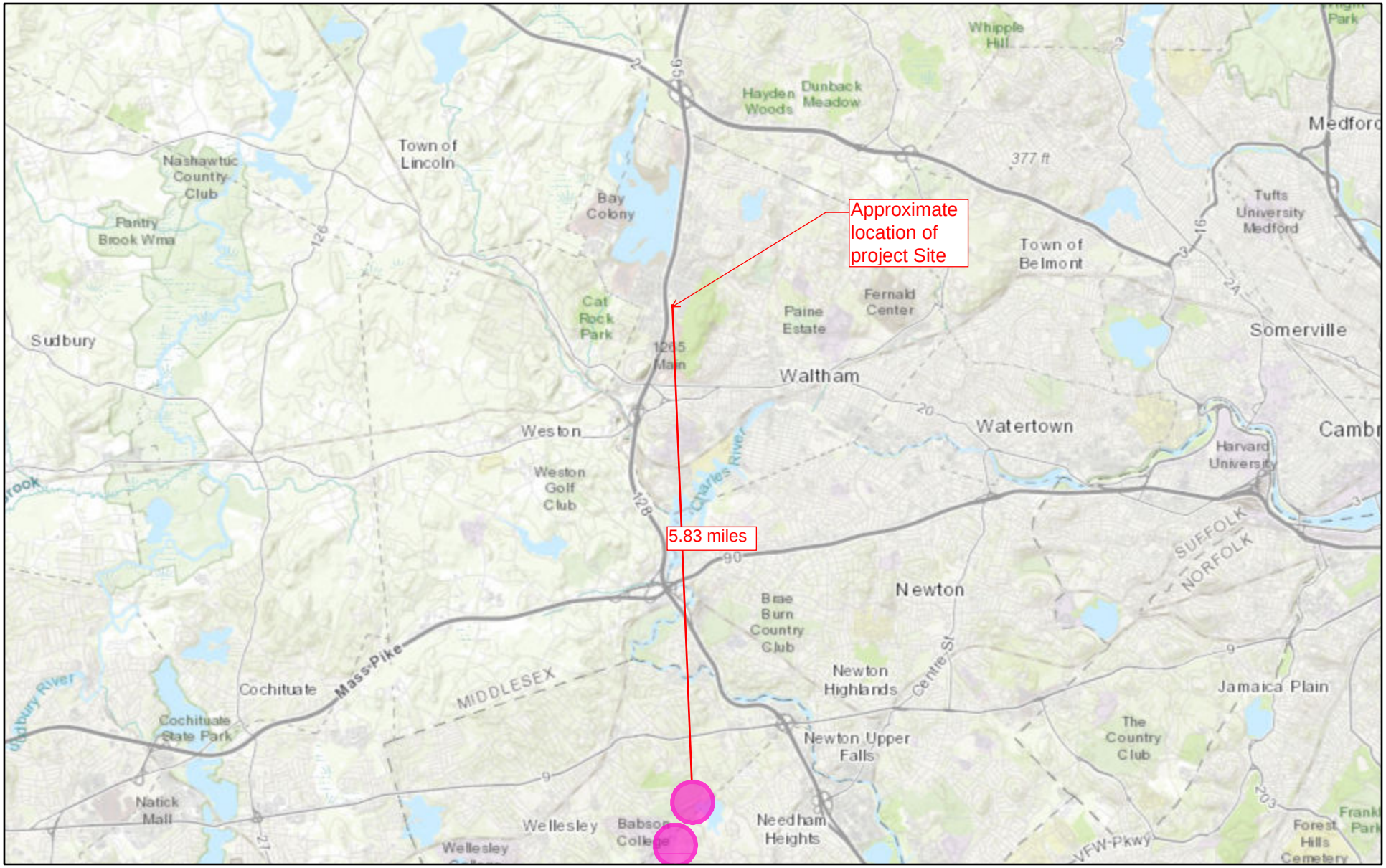
NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

NHESP No. Long-Eared Bat Locations Waltham



April 29, 2021

MA Northern Long-eared Bat Winter Hibernacula (with ¼ mile buffer)

1:144,448

0 0.75 1.5 3 mi

0 1.5 3 6 km

City of Newton, City of Waltham, MassGIS, Esri Canada, Esri, HERE,

Documentation of the Results of the ESA Eligibility Determination:

Using information in Appendix II of the NPDES RGP, the project located at 180 Third Avenue, Waltham, MA is eligible for coverage under this general permit under FWS Criterion C. This project is located in Middlesex County. No designated critical habitats were listed in the project area. An Endangered Species Consultation was conducted on the U.S. Fish & Wildlife Service New England Field Office ECOS IPaC webpage for the Site:

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

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

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

From:	Meagan Riley - NOAA Affiliate
To:	Americo Santamaria
Cc:	Christine Vaccaro - NOAA Federal; NMFS.GAR ESA.Section7 - NOAA Service Account
Subject:	Re: 180 Third Ave, Waltham MA - NPDES RGP Discharge Impact
Date:	Monday, May 3, 2021 11:26:14 AM

Hi, Rico. There are no species present in the vicinity of your project.

Please see our ESA Section 7 Mapper for information about where species present: https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27 and also see our Species Tables for detailed information about listed species: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater#species-tables. These tools will provide you with helpful information about ESA-listed species and are available to assist you in the future.

Thank you,
Meagan

Meagan Riley
Environmental Specialist
Integrated Statistics, Inc. | In support of NOAA Fisheries
GARFO Protected Resources Division
Office: 978-281-9339

On Mon, May 3, 2021 at 11:10 AM NMFS.GAR ESA.Section7 - NOAA Service Account <nmfs.gar.esa.section7@noaa.gov> wrote:

> TA request for a consultation with EPA.
>
> ---------- Forwarded message ---------
> From: **Americo Santamaria** <asantamaria@sanbornhead.com>
> Date: Fri, Apr 30, 2021 at 11:48 AM
> Subject: 180 Third Ave, Waltham MA - NPDES RGP Discharge Impact
> To: NMFS.GAR.ESA.Section7@Noaa.gov <NMFS.GAR.ESA.Section7@noaa.gov>
> Cc: Corinne Disenhof <cdisenhof@sanbornhead.com>, Anna Campbell <acampbell@sanbornhead.com>, Kevin Stetson <kstetson@sanbornhead.com>
>
> *Good morning,*
>
> I am requesting information to be included in a Notice of Intent (NOI) for a Remediation General Permit (RGP). The NOI is for construction dewatering during construction activities at 180 Third Avenue in Waltham, Massachusetts. Effluent will be discharged to a storm drain which empties to a detention pond located at 20 City Point in Waltham, MA. The detention pond empties

to Kendall Brook at an outlet located at approximately 42.39647 Latitude, -71.25683 Longitude. Our understanding is that the Kendall Brook is not listed on the integrated list of waters; it eventually empties into the Beaver Brook.

As part of the application to the EPA for the RGP, we need to determine if this proposed temporary discharge has the potential to adversely affect any federally listed species in the reach of Kendall Brook and Beaver Brook downstream of the discharge point.

Please let me know if you require any further information.

Thank you,

-Rico

Americo J. Santamaria
Project Manager

SANBORN | HEAD & ASSOCIATES, INC.

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APPENDIX F

NATIONAL REGISTER OF HISTORICAL PLACES, WALTHAM, MASSACHUSETTS

NRHP
Historic Buildings
Demolished
Historic
Historic Districts
Parcels
Parking Lots
Paved Area
Unpaved Area

1" = 556 ft

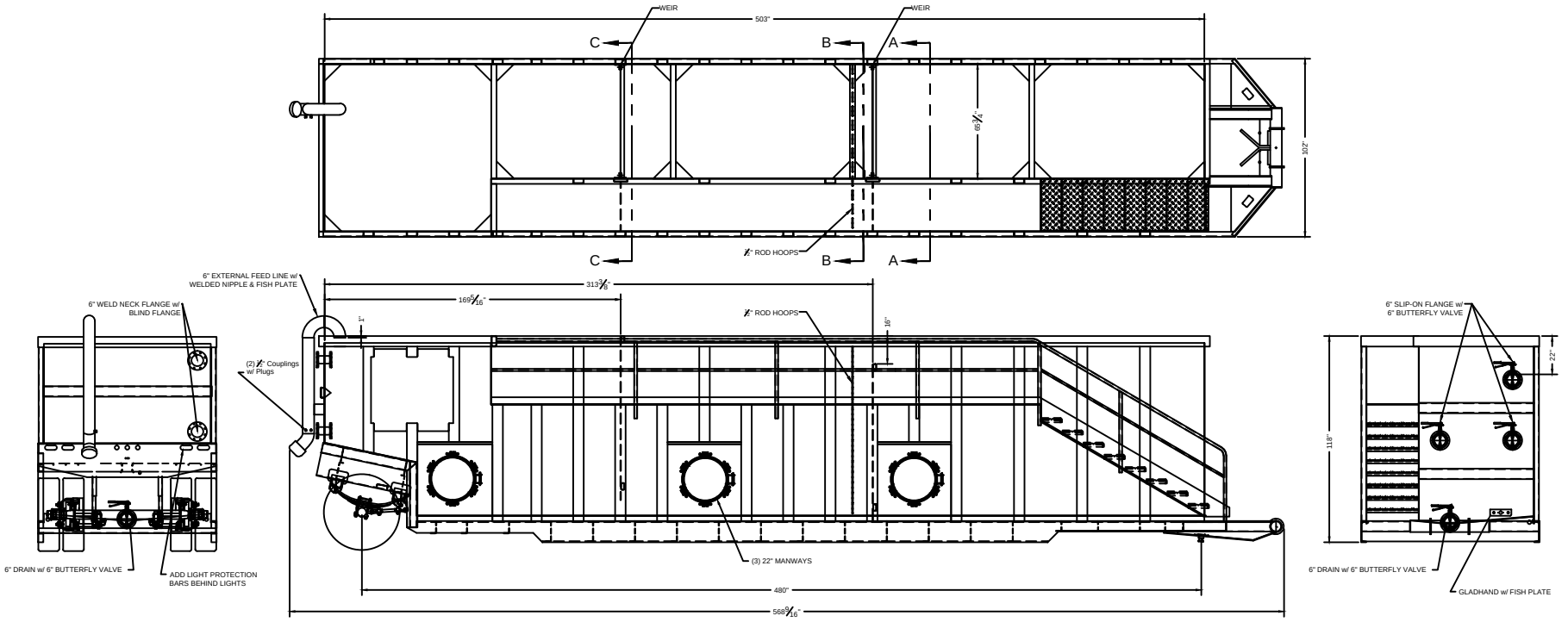
Ref#	Property Name	State	County	City	Street & Number	Restricted Address	Listed Date
89001501	American Waltham Watch Company Historic District	MASSACHUSETTS	Middlesex	Waltham	185--241 Crescent St.	FALSE	9/28/1989
89001574	American Watch Tool Company	MASSACHUSETTS	Middlesex	Waltham	169 Elm St.	FALSE	9/28/1989
89001554	Andrews, Joseph, House	MASSACHUSETTS	Middlesex	Waltham	258 Linden St.	FALSE	9/28/1989
89001484	Baker, Charles, House	MASSACHUSETTS	Middlesex	Waltham	107 Adams St.	FALSE	9/28/1989
89001485	Baker, Charles, Property	MASSACHUSETTS	Middlesex	Waltham	119--121 Adams St.	FALSE	9/28/1989
89001488	Banks, E. Sybbill, House	MASSACHUSETTS	Middlesex	Waltham	27 Appleton St.	FALSE	9/28/1989
89001529	Beard, Josiah, House	MASSACHUSETTS	Middlesex	Waltham	70 School St.	FALSE	9/28/1989
89001544	Beth Eden Baptist Church	MASSACHUSETTS	Middlesex	Waltham	82 Maple St.	FALSE	9/28/1989
77001412	Boston Manufacturing Company	MASSACHUSETTS	Middlesex	Waltham	144 Moody St.	FALSE	12/22/1977
89001534	Boston Manufacturing Company Housing	MASSACHUSETTS	Middlesex	Waltham	380--410 River St.	FALSE	9/28/1989
89001535	Boston Manufacturing Company Housing	MASSACHUSETTS	Middlesex	Waltham	153--165 River St.	FALSE	9/28/1989
89001551	Brigham House	MASSACHUSETTS	Middlesex	Waltham	235 Main St.	FALSE	9/28/1989
89001493	Building at 202--204 Charles Street	MASSACHUSETTS	Middlesex	Waltham	202--204 Charles St.	FALSE	9/28/1989
89001566	Buttrick, Francis, House	MASSACHUSETTS	Middlesex	Waltham	44 Harvard St.	FALSE	9/28/1989
89001547	Buttrick, Francis, Library	MASSACHUSETTS	Middlesex	Waltham	741 Main St.	FALSE	9/28/1989
89001576	Byam, Charles, House	MASSACHUSETTS	Middlesex	Waltham	337 Crescent St.	FALSE	9/28/1989
79000359	Castle, The	MASSACHUSETTS	Middlesex	Waltham	415 South St.	FALSE	4/9/1979
89001526	Central Square Historic District	MASSACHUSETTS	Middlesex	Waltham	Roughly bounded by Church, Carter, Moody, M	FALSE	9/28/1989
89001503	Charles Street Workers' Housing Historic District	MASSACHUSETTS	Middlesex	Waltham	128--144 Charles St.	FALSE	9/28/1989
89001546	Christ Episcopal Church	MASSACHUSETTS	Middlesex	Waltham	750 Main St.	FALSE	9/28/1989
89001536	Clough, Benjamin F., House	MASSACHUSETTS	Middlesex	Waltham	42 Prospect St.	FALSE	9/28/1989
89001578	Colburn, Gilbert, House	MASSACHUSETTS	Middlesex	Waltham	110--112 Crescent St.	FALSE	9/28/1989
89001571	Company F State Armory	MASSACHUSETTS	Middlesex	Waltham	Curtis and Sharon Sts.	FALSE	9/28/1989
89001487	Dow, Lenoir, House	MASSACHUSETTS	Middlesex	Waltham	215 Adams St.	FALSE	9/28/1989
89001517	Dunbar--Stearns House	MASSACHUSETTS	Middlesex	Waltham	209 Linden St.	FALSE	3/9/1990
89001498	East Main Street Historic District	MASSACHUSETTS	Middlesex	Waltham	Roughly E. Main St. from Townsend St. to Cham	FALSE	9/28/1989
89001516	Eastern Middlesex County Second District Court	MASSACHUSETTS	Middlesex	Waltham	34 Linden St.	FALSE	9/28/1989
93001487	Fernald, Walter E., State School	MASSACHUSETTS	Middlesex	Waltham	200 Trapelo Rd.	FALSE	1/21/1994
89001548	First Congregational Church	MASSACHUSETTS	Middlesex	Waltham	730 Main St.	FALSE	9/28/1989
89001507	First Parish Church	MASSACHUSETTS	Middlesex	Waltham	87 School St.	FALSE	9/28/1989
89001577	Fisher, Henry N., House	MASSACHUSETTS	Middlesex	Waltham	120 Crescent St.	FALSE	9/28/1989
89001514	Fiske, Elijah, House	MASSACHUSETTS	Middlesex	Waltham	457 Lincoln St.	FALSE	9/28/1989
89001489	Fitch, Ezra, School	MASSACHUSETTS	Middlesex	Waltham	10 Ash St.	FALSE	9/28/1989
89001573	Flagg, Frederick, House	MASSACHUSETTS	Middlesex	Waltham	65 Fairmont Ave.	FALSE	9/28/1989
89001581	French, Daniel, School	MASSACHUSETTS	Middlesex	Waltham	38--40 Common St.	FALSE	9/28/1989
89001495	Fuller--Bemis House	MASSACHUSETTS	Middlesex	Waltham	119 Adams St.	FALSE	3/9/1990
89001545	Gale--Banks House	MASSACHUSETTS	Middlesex	Waltham	935 Main St.	FALSE	3/9/1990
89001561	Gibbs, William, House	MASSACHUSETTS	Middlesex	Waltham	14 Liberty St.	FALSE	9/28/1989
89001550	Gilbrae Inn	MASSACHUSETTS	Middlesex	Waltham	403 River St.	FALSE	9/28/1989
70000542	Gore Place	MASSACHUSETTS	Middlesex	Waltham	52 Gore St.	FALSE	12/30/1970
89001549	Grove Hill Cemetery	MASSACHUSETTS	Middlesex	Waltham	290 Main St.	FALSE	9/28/1989
89001532	Hagar--Smith--Livermore--Sanderson House	MASSACHUSETTS	Middlesex	Waltham	51 Sanders Ln.	FALSE	9/28/1989
89001572	Hager--Mead House	MASSACHUSETTS	Middlesex	Waltham	411 Main St.	FALSE	9/28/1989
89001579	Hall, Henry C., House	MASSACHUSETTS	Middlesex	Waltham	107 Crescent St.	FALSE	9/28/1989

Ref#	Property Name	State	County	City	Street & Number	Restricted Address	Listed Date
89001490	Hammond, Ephraim, House	MASSACHUSETTS	Middlesex	Waltham	265 Beaver St.	FALSE	9/28/1989
89001491	Hammond, Jonathan, House	MASSACHUSETTS	Middlesex	Waltham	311 Beaver St.	FALSE	9/28/1989
89001562	Hardy, Nahum, House	MASSACHUSETTS	Middlesex	Waltham	724 Lexington St.	FALSE	9/28/1989
89001543	Harrington Block	MASSACHUSETTS	Middlesex	Waltham	376--390 Moody St.	FALSE	9/28/1989
89001508	Harrington, Samuel, House	MASSACHUSETTS	Middlesex	Waltham	475 South St.	FALSE	9/28/1989
89001528	Hill, Rev. Thomas, House	MASSACHUSETTS	Middlesex	Waltham	132 Church St.	FALSE	9/28/1989
89001524	Hobbs Brook Basin Gate House	MASSACHUSETTS	Middlesex	Waltham	Off Winter St. at mouth of Hobbs Brook	FALSE	9/28/1989
89001565	Holbrook, Richard, Houses	MASSACHUSETTS	Middlesex	Waltham	27 Heard St.	FALSE	9/28/1989
89001522	Johnson, Edwin C., House	MASSACHUSETTS	Middlesex	Waltham	8 Caldwell Rd.	FALSE	9/28/1989
89001564	Johnson, Newell D., House	MASSACHUSETTS	Middlesex	Waltham	428 Lexington St.	FALSE	9/28/1989
87001397	Lawrence, Phineas, House	MASSACHUSETTS	Middlesex	Waltham	257 Trapelo Rd.	FALSE	8/20/1987
89001504	Lawton Place Historic District	MASSACHUSETTS	Middlesex	Waltham	Lawton Pl. between Amory Rd. and Jackson St.	FALSE	9/28/1989
89001521	Libby, Nelson F., House	MASSACHUSETTS	Middlesex	Waltham	147--149 Weston St.	FALSE	9/28/1989
89001515	Linden Street Bridge	MASSACHUSETTS	Middlesex	Waltham	Boston & Maine Railroad over Linden St.	FALSE	9/28/1989
89001567	Lord's Castle	MASSACHUSETTS	Middlesex	Waltham	211 Hammond St.	FALSE	9/28/1989
89001505	Lyman Street Historic District	MASSACHUSETTS	Middlesex	Waltham	Roughly Lyman St. from Church to Main Sts.	FALSE	9/28/1989
89001540	Martin, Aaron, House	MASSACHUSETTS	Middlesex	Waltham	786 Moody St.	FALSE	9/28/1989
89001486	Martin, Aaron, Houses	MASSACHUSETTS	Middlesex	Waltham	188--194 Adams St.	FALSE	9/28/1989
93001482	Metropolitan State Hospital	MASSACHUSETTS	Middlesex	Waltham	475 Trapelo Rd.	FALSE	1/21/1994
89001541	Moody Street Fire Station	MASSACHUSETTS	Middlesex	Waltham	533 Moody St.	FALSE	9/28/1989
89001502	Moody Street Historic District	MASSACHUSETTS	Middlesex	Waltham	Moody and Crescent Sts.	FALSE	3/9/1990
89001497	Mount Feake Cemetery	MASSACHUSETTS	Middlesex	Waltham	203 Prospect St.	FALSE	9/28/1989
89001525	Mt. Prospect School for Boys	MASSACHUSETTS	Middlesex	Waltham	90 Worcester Ln.	FALSE	3/9/1990
89001580	Murray, Robert, House	MASSACHUSETTS	Middlesex	Waltham	85 Crescent St.	FALSE	9/28/1989
89001539	Newton Street Bridge	MASSACHUSETTS	Middlesex	Waltham	Newton St. at River St. over the Charles River	FALSE	9/28/1989
89001500	North Lexington Street Historic District	MASSACHUSETTS	Middlesex	Waltham	508--536 N. Lexington St.	FALSE	9/28/1989
89001533	O'Hara Waltham Dial Company	MASSACHUSETTS	Middlesex	Waltham	74 Rumford Ave.	FALSE	9/28/1989
89001492	Olcott, John E., House	MASSACHUSETTS	Middlesex	Waltham	35--37 Central St.	FALSE	9/28/1989
89001483	Oxford, The	MASSACHUSETTS	Middlesex	Waltham	4 Adams St.	FALSE	9/28/1989
75000291	Paine, Robert Treat, Jr., House	MASSACHUSETTS	Middlesex	Waltham	577 Beaver St.	FALSE	10/7/1975
89001559	Peck, John M., House	MASSACHUSETTS	Middlesex	Waltham	27 Liberty St.	FALSE	9/28/1989
89001499	Piety Corner Historic District	MASSACHUSETTS	Middlesex	Waltham	Roughly Bacon and Lexington Sts.	FALSE	3/9/1990
89001538	Potter--O'Brian House	MASSACHUSETTS	Middlesex	Waltham	206 Newton St.	FALSE	9/28/1989
89001568	Prospect House	MASSACHUSETTS	Middlesex	Waltham	11 Hammond St.	FALSE	9/28/1989
89001496	Robbins, Royal E., School	MASSACHUSETTS	Middlesex	Waltham	58 Chestnut St.	FALSE	9/28/1989
89001563	Sanderson, John, House	MASSACHUSETTS	Middlesex	Waltham	562 Lexington St.	FALSE	9/28/1989
89001556	Sanderson, Nathan, I, House	MASSACHUSETTS	Middlesex	Waltham	107 Lincoln St.	FALSE	9/28/1989
89001513	Sanderson, Nathan, II, House	MASSACHUSETTS	Middlesex	Waltham	111 Lincoln St.	FALSE	9/28/1989
89001557	Sanderson--Clark Farmhouse	MASSACHUSETTS	Middlesex	Waltham	75 Lincoln/26 Lincoln Ter.	FALSE	9/28/1989
89001560	Smith, Marshall, House	MASSACHUSETTS	Middlesex	Waltham	26 Liberty St.	FALSE	9/28/1989
89001558	Smith, Perez, House	MASSACHUSETTS	Middlesex	Waltham	46 Lincoln St.	FALSE	9/28/1989
89001569	St. Charles Borromeo Church	MASSACHUSETTS	Middlesex	Waltham	Hall and Cushing Sts.	FALSE	9/28/1989
89001527	St. Mary's Roman Catholic Church Complex	MASSACHUSETTS	Middlesex	Waltham	133 School St.	FALSE	9/28/1989
89001509	Stanley, Leonard W., House	MASSACHUSETTS	Middlesex	Waltham	23--25 Taylor St.	FALSE	9/28/1989

Ref#	Property Name	State	County	City	Street & Number	Restricted Address	Listed Date
89001542	Stark Building	MASSACHUSETTS	Middlesex	Waltham	414 Moody St.	FALSE	9/28/1989
89001552	Stark, Robert M., House	MASSACHUSETTS	Middlesex	Waltham	176 Main St.	FALSE	9/28/1989
89001518	Stearns, Amos, House	MASSACHUSETTS	Middlesex	Waltham	1079 Trapelo Rd.	FALSE	9/28/1989
89001553	Stewart, Henry, House	MASSACHUSETTS	Middlesex	Waltham	294 Linden St.	FALSE	9/28/1989
89001530	Swasey, James, House	MASSACHUSETTS	Middlesex	Waltham	30 Common St.	FALSE	9/28/1989
89001555	Tyler, Frank J., House	MASSACHUSETTS	Middlesex	Waltham	238 Linden St.	FALSE	9/28/1989
89001494	United States Watch Company	MASSACHUSETTS	Middlesex	Waltham	260 Charles St.	FALSE	9/28/1989
86001248	US Post Office--Waltham Main	MASSACHUSETTS	Middlesex	Waltham	774 Main St.	FALSE	5/30/1986
70000737	Vale, The	MASSACHUSETTS	Middlesex	Waltham	Lyman and Beaver Sts.	FALSE	12/30/1970
89001537	Waltham Gas and Electric Company Generating Plan	MASSACHUSETTS	Middlesex	Waltham	96 Pine St.	FALSE	9/28/1989
89001506	Waltham Gas Light Company	MASSACHUSETTS	Middlesex	Waltham	2 Cooper St.	FALSE	9/28/1989
89001531	Waltham High School	MASSACHUSETTS	Middlesex	Waltham	55 School St.	FALSE	9/28/1989
89001570	Waltham Water Works Shop	MASSACHUSETTS	Middlesex	Waltham	92 Felton St.	FALSE	9/28/1989
89001520	Warren, Nathan, House	MASSACHUSETTS	Middlesex	Waltham	50 Weston St.	FALSE	3/9/1990
89001523	Wellington, Benjamin, House	MASSACHUSETTS	Middlesex	Waltham	56 Whittier St.	FALSE	9/28/1989
89001512	Wellington, William, House	MASSACHUSETTS	Middlesex	Waltham	775 Trapelo Rd.	FALSE	9/28/1989
89001511	Wellington--Castner House	MASSACHUSETTS	Middlesex	Waltham	685 Trapelo Rd.	FALSE	9/28/1989
89001575	Wetherbee House	MASSACHUSETTS	Middlesex	Waltham	357 Crescent St.	FALSE	9/28/1989
89001519	White, Warren, House	MASSACHUSETTS	Middlesex	Waltham	192 Warren St.	FALSE	9/28/1989
89001510	Whitney--Farrington--Cook House	MASSACHUSETTS	Middlesex	Waltham	385 Trapelo Rd.	FALSE	9/28/1989
99001126	Wilson's Diner	MASSACHUSETTS	Middlesex	Waltham	507 Main St.	FALSE	9/22/1999

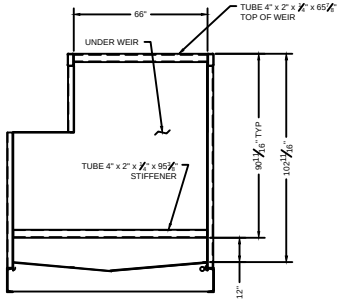
APPENDIX G

CUTSHEETS

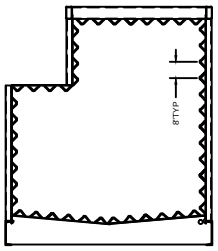


STANDARD SPECIFICATION

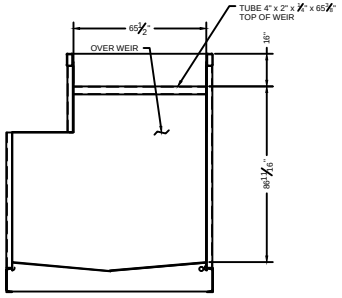
CAPACITY: .... 18,480 GALLONS (440 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE
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.



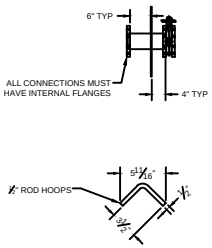
SECTION VIEW "C-C"



SECTION VIEW "B-B"



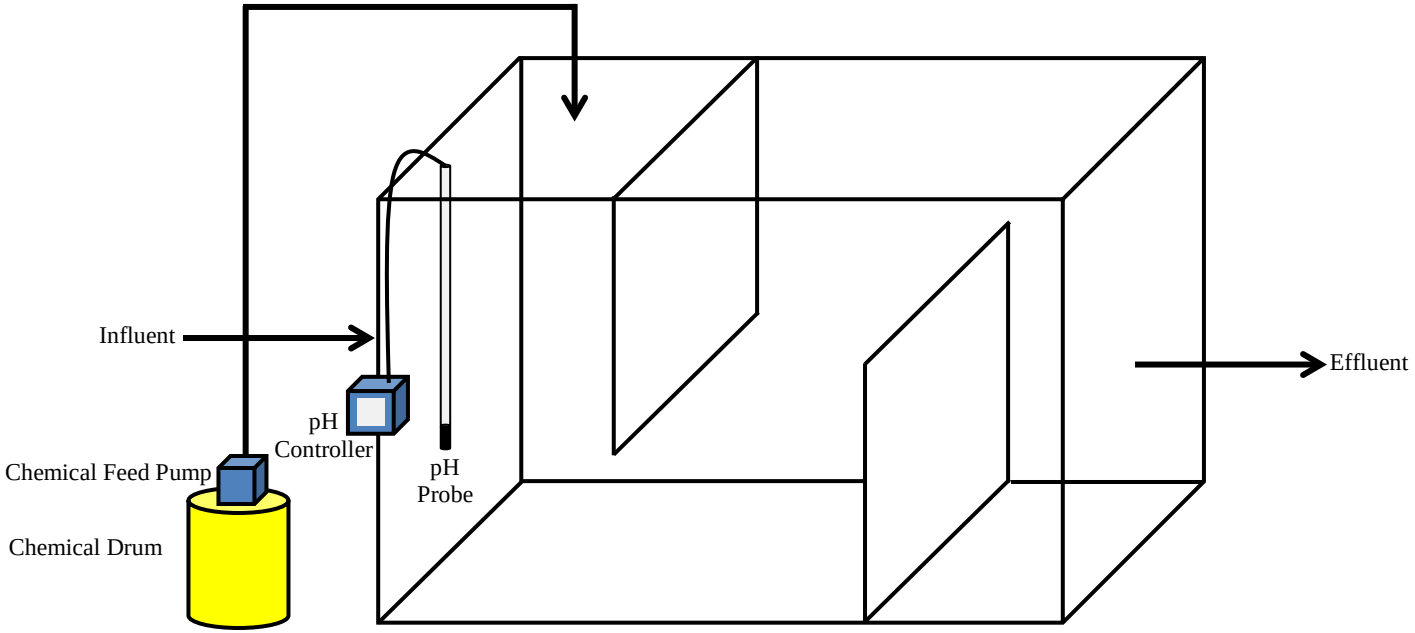
SECTION VIEW "A-A"



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

Lockwood Remediation Technologies, LLC

One Controller for the Broadest Range of Sensors.

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

Maximum Versatility

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

Ease of Use and Confidence in Results

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

Wide Variety of Communication Options

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

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

Controller Comparison

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

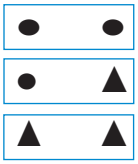
Choose from Hach's Broad Range of Digital and Analog Sensors

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

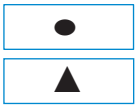
● = Digital ▲ = Analog

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

2 Channel Configurations



1 Channel Configurations



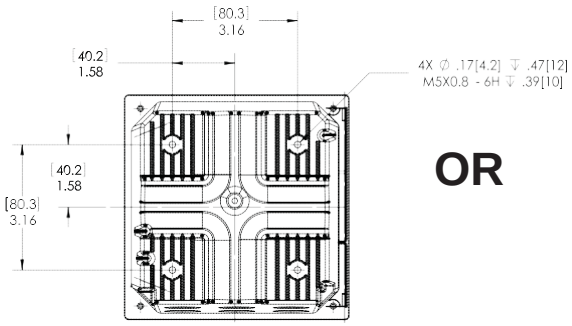
Specifications*

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

**Subject to change without notice.*

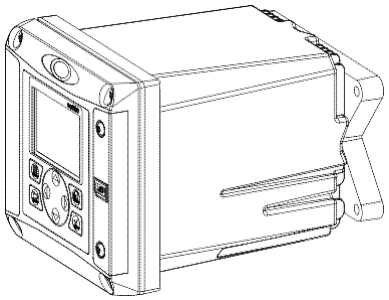
Dimensions

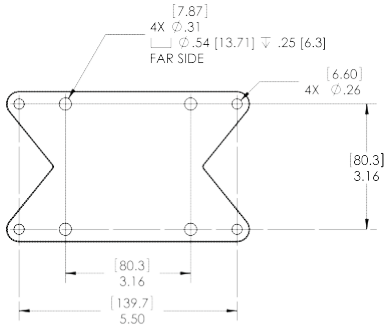
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

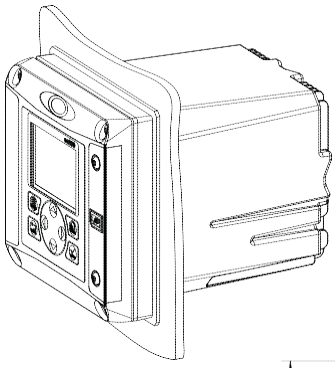
OR

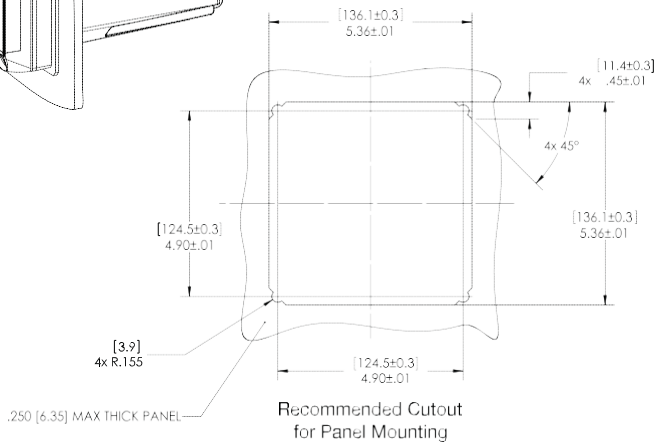




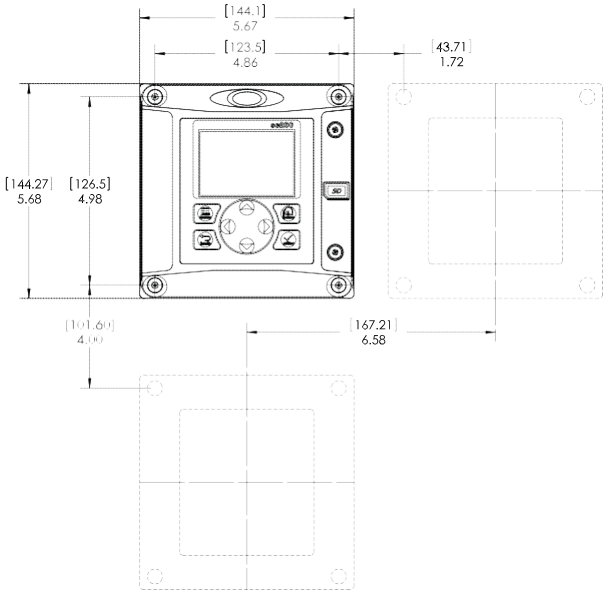
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



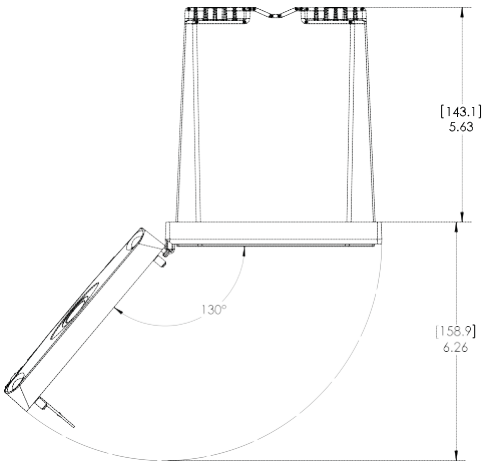


Recommended Cutout
for Panel Mounting

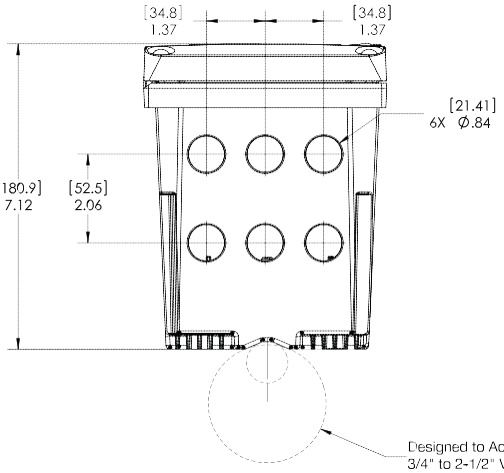


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views

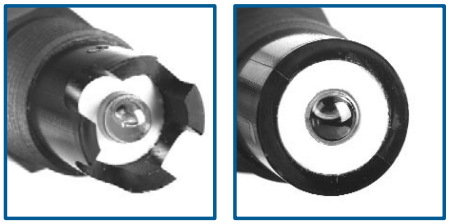


Door Opening Details



3/4-inch Combination pH and ORP Sensor Kits

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



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

Features and Benefits

Low Price—High Performance

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

Special Electrode Configurations

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

Temperature Compensation Element Option

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

Versatile Mounting Styles

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

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

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

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

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

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

Specifications*

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

Combination pH Sensors

Measuring Range
0 to 14 pH

Accuracy
Less than 0.1 pH under reference conditions

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

Sanitary style: 316 stainless steel sleeved PVDF body

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

Warranty
90 days

Combination ORP Sensors

Measuring Range
-2000 to +2000 millivolts

Accuracy
Limited to calibration solution accuracy (± 20 mV)

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

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

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

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

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

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

Wetted Materials

Convertible style: Ryton® body (glass filled)

Insertion style: PVDF body (Kynar®)

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

Warranty
90 days

**Specifications subject to change without notice.*

Engineering Specifications

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

Dimensions

Convertible Style Sensor

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

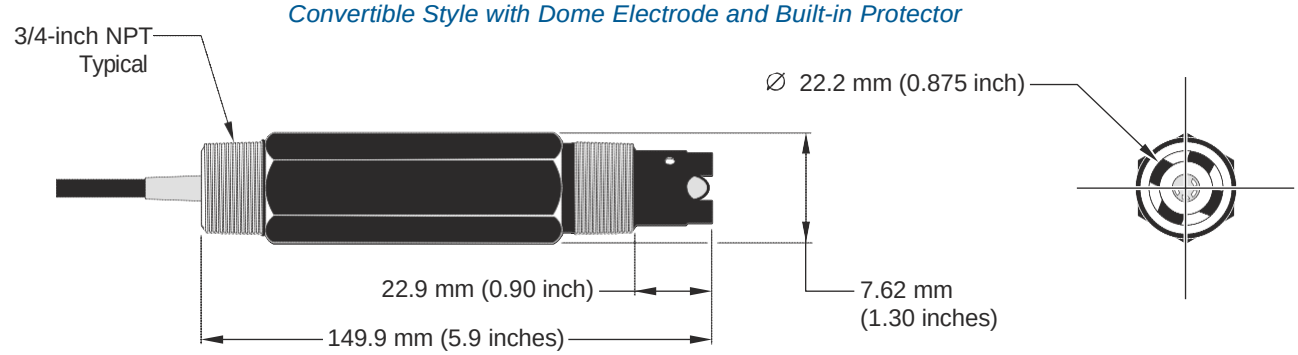
Insertion Style Sensor

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

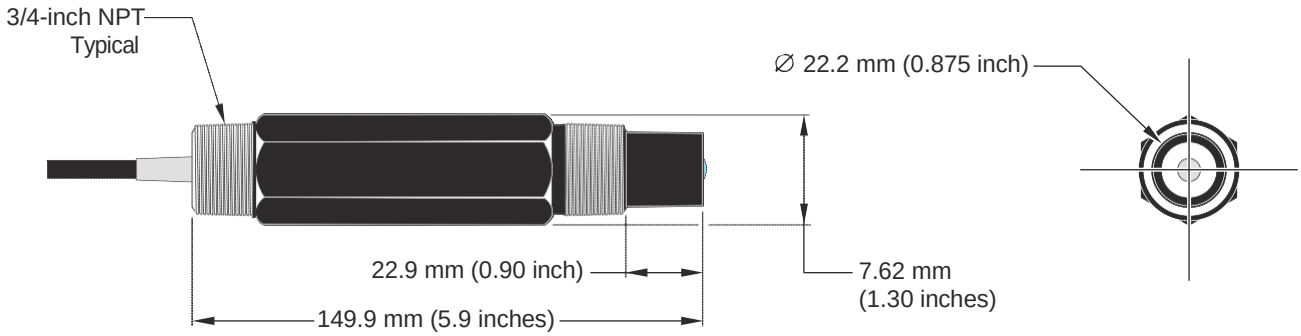
Sanitary Style Sensor

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

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



Lockwood Remediation Technologies, LLC

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

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

Features

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

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

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

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

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

Operating Benefits

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

Aftermarket

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

Series A Plus
Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

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

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

Engineering Data

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

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

Engineering Data

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

Custom Engineered Designs - Pre-Engineered Systems

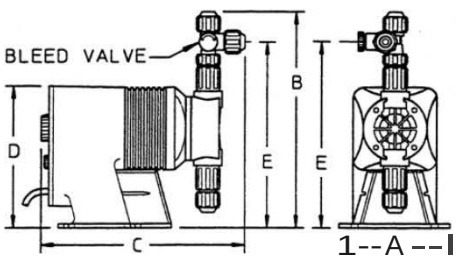
Pre-Engineered Systems

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

Dimensions

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

NOTE: Inches X 2.54 cm



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

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

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

A95OVER Specifications

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

Metric Equivalent Specifications

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

A95OVER Technical Information

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

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

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

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

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

: **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

Name, address, and telephone number of the manufacturer:

Refer to supplier

Supplier's Telephone # : 508-675-0096

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.

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

SAFETY DATA SHEET

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.

SAFETY DATA SHEET

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

SAFETY DATA SHEET

: 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

ABCE

GORMAN-RUPP PUMPS

Basic Pedestal

Standard Centrifugal Pump

Model VGH4C31-B

Size 5” x 4”

PUMP SPECIFICATIONS

Size: 5” x 4” (127 mm x 102 mm) Raised Face Flanges.

Casing: Ductile Iron.
Maximum Operating Pressure 109 psi (752 kPa).*

Enclosed Type, Six Vane Impeller: Gray Iron 40.
Handles 21/32” (17 mm) Diameter Spherical Solids.

Impeller Shaft: Steel 1045.

Two Replaceable Wear Rings: Gray Iron 25.

Seal Plate: Ductile Iron.

Bypass Flush Piping.

Bearing Housing: Gray Iron 25.

Radial Bearing: Open Cylindrical Roller.

Thrust Bearing: Open Double Row Ball.
Bearing Lubrication: SAE 30 Non-Detergent Oil.

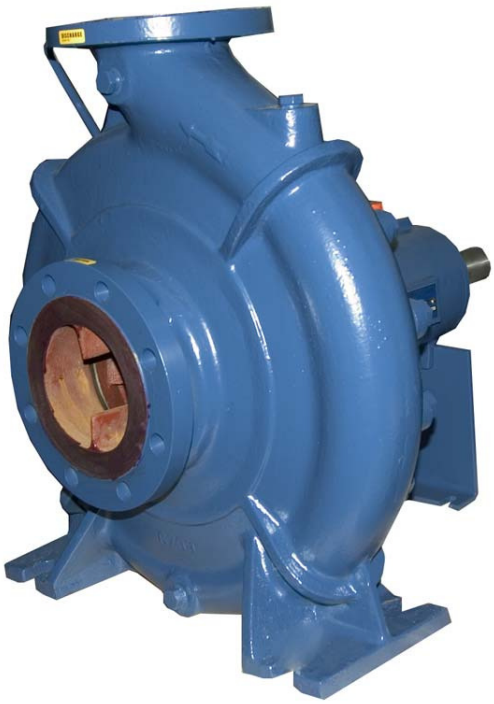
Gaskets: Nitrile Rubber.

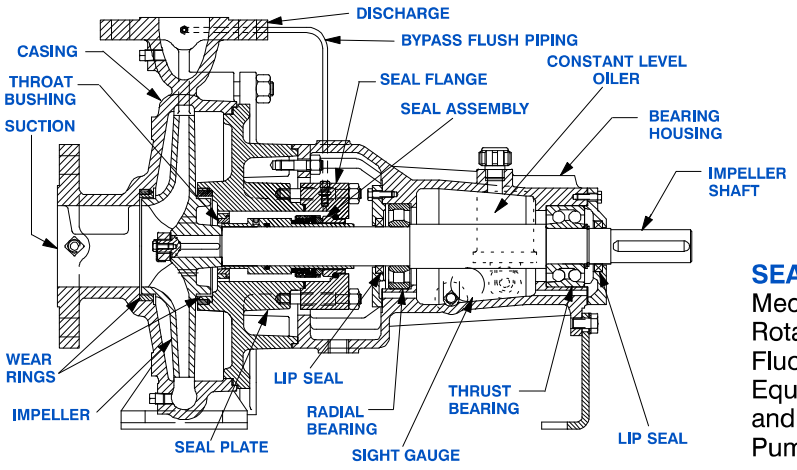
Hardware: Standard Plated Steel.

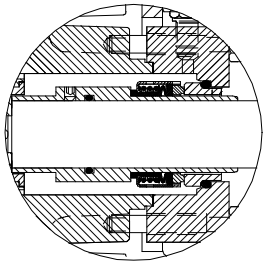
Bearing Housing Level Oiler.

Optional Equipment: Strainer. NPT Suction and Discharge Flanges. Discharge Check Valve. Consult Factory for Optional Seals.

Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.







SEAL DETAIL

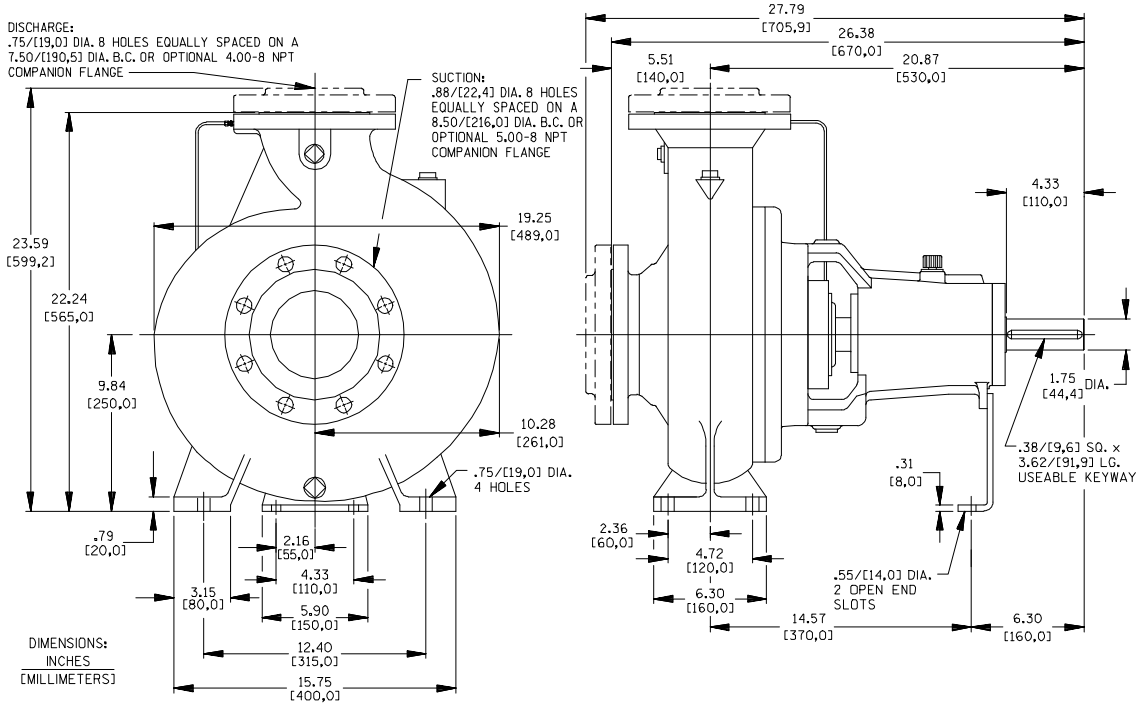
Mechanical, Self-Lubricated. Silicon Carbide Rotating and Stationary Faces. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 316 Shaft Sleeve and Spring. Maximum Temperature of Liquid Pumped, 160°F (71°C).*

Specification Data

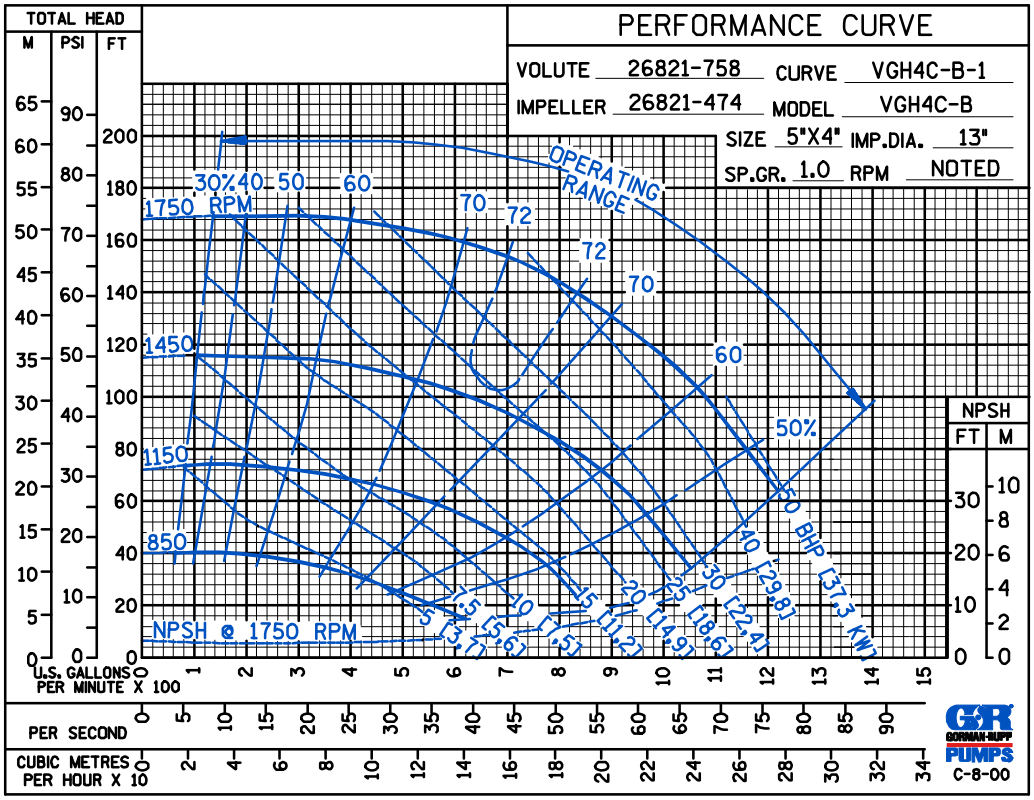
SECTION 70, PAGE 711

APPROXIMATE
DIMENSIONS and WEIGHTS

NET WEIGHT: 346 LBS. (157 KG.)
SHIPPING WEIGHT: 361 LBS. (164 KG.)
EXPORT CRATE SIZE: 13.2 CU. FT. (0,4 CU. M.)



PERFORMANCE BASED ON WATER



THE GORMAN-RUPP COMPANY ● MANSFIELD, OHIO

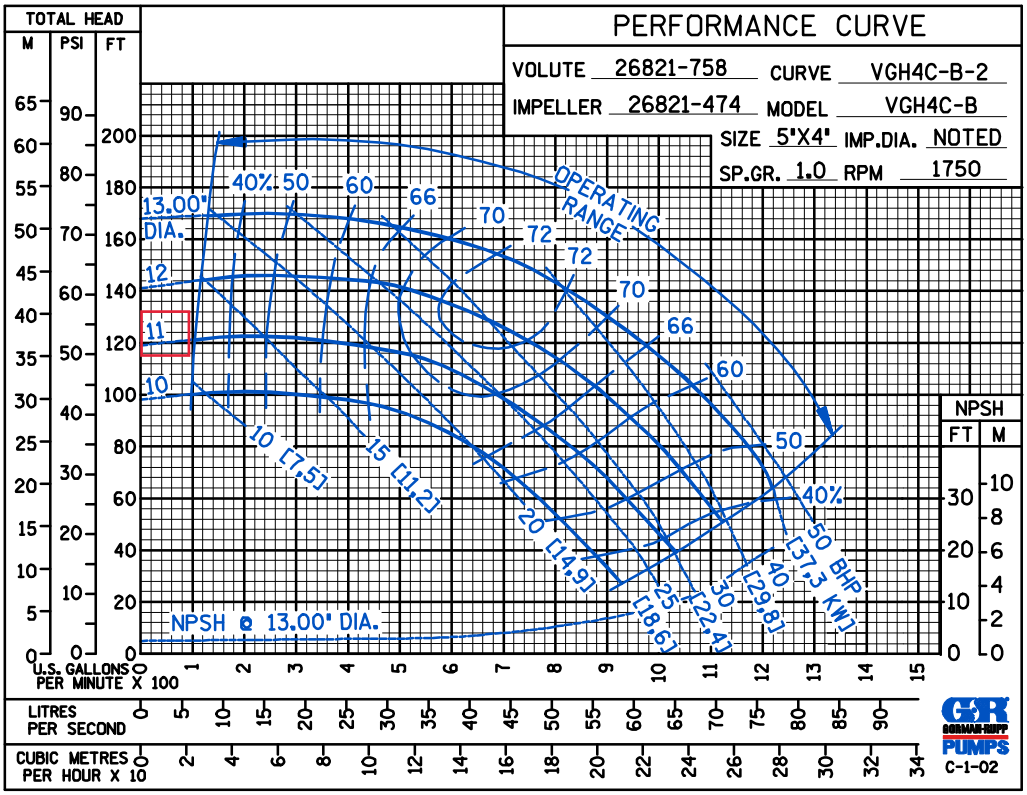
GORMAN-RUPP OF CANADA LIMITED ● ST. THOMAS, ONTARIO, CANADA

Specifications Subject to Change Without Notice

Printed in U.S.A.

A B C E

PERFORMANCE BASED ON WATER



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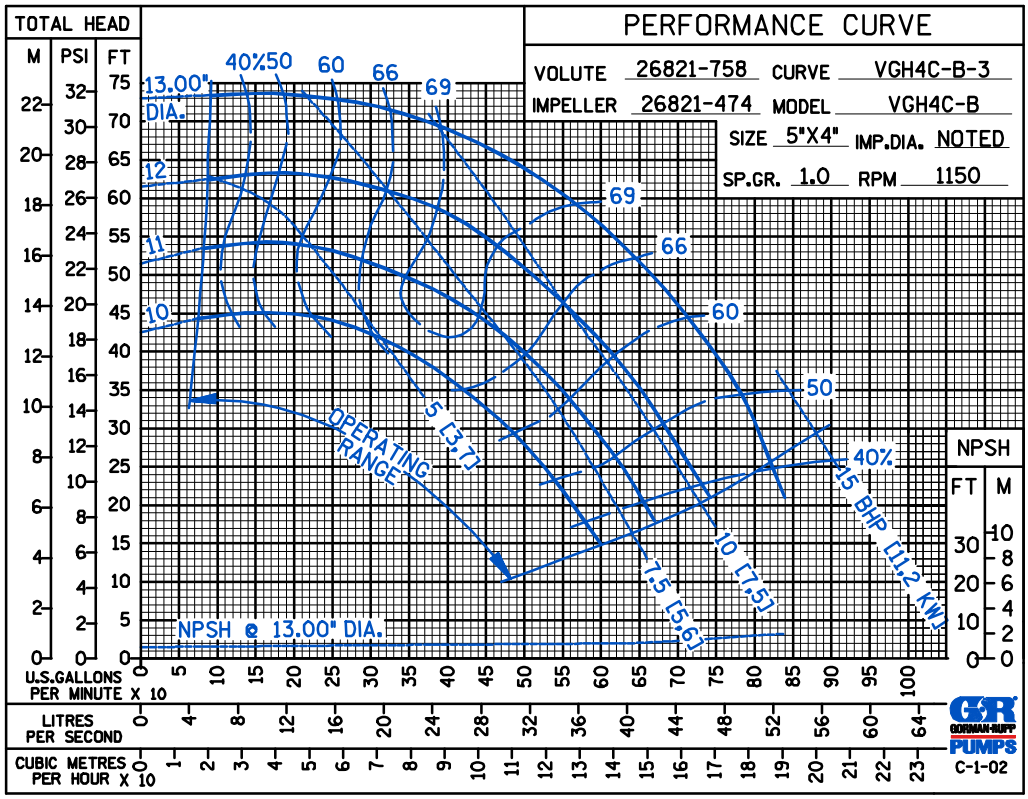

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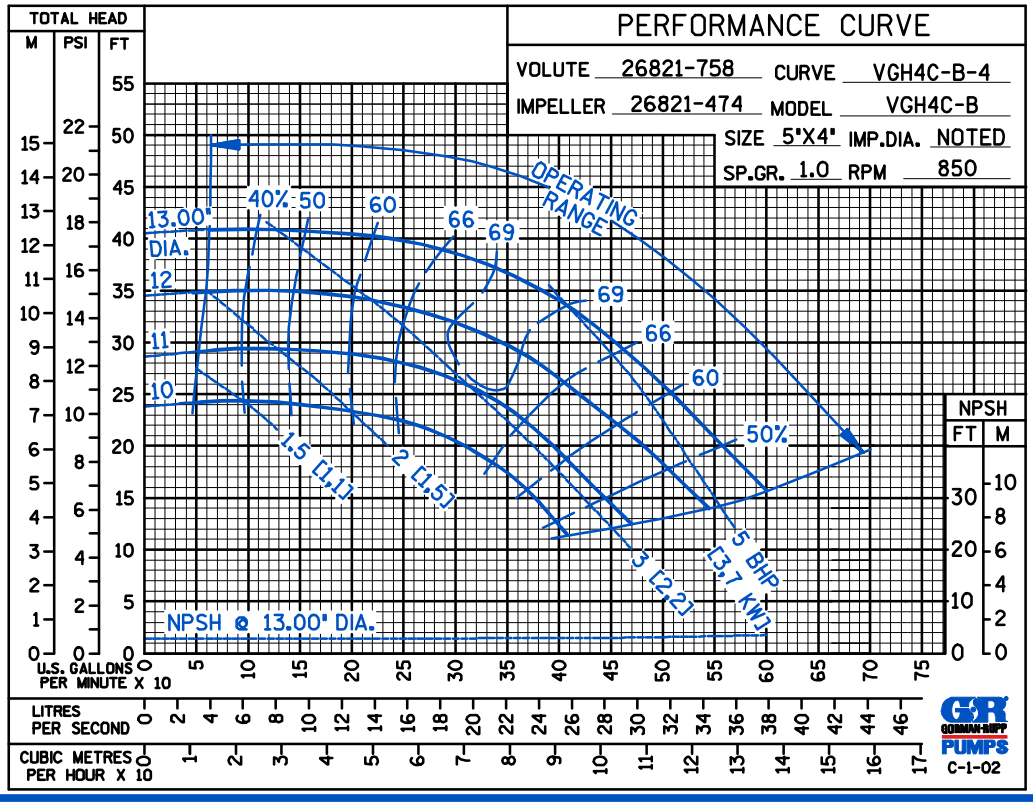

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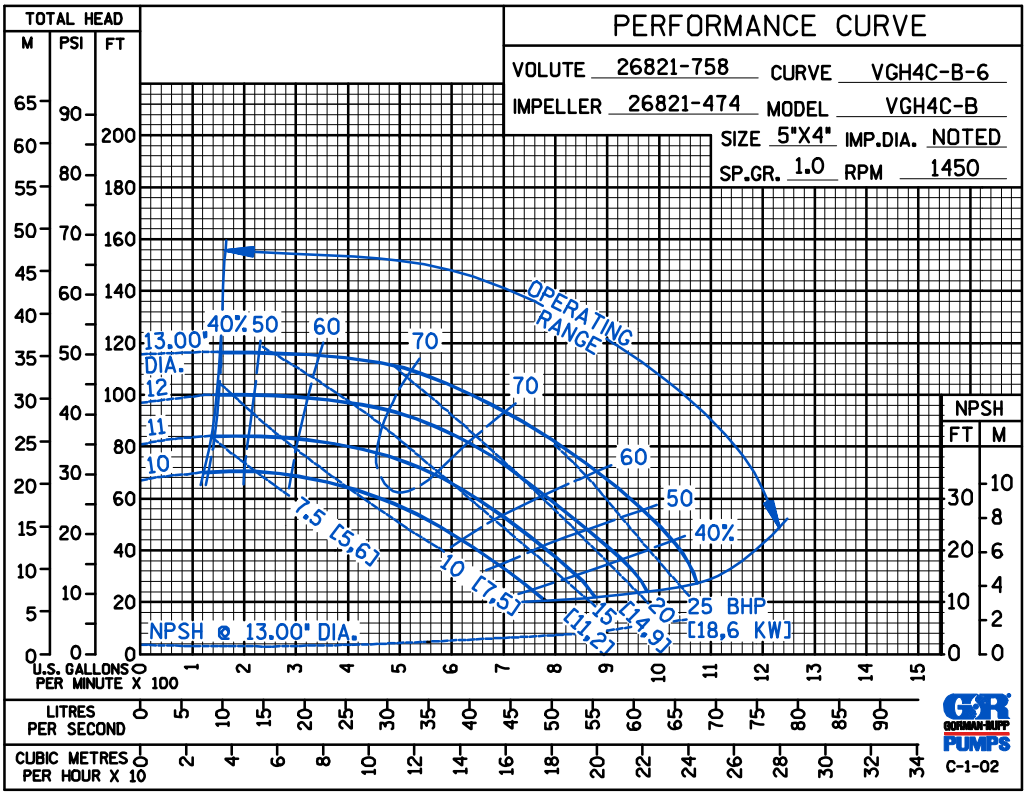
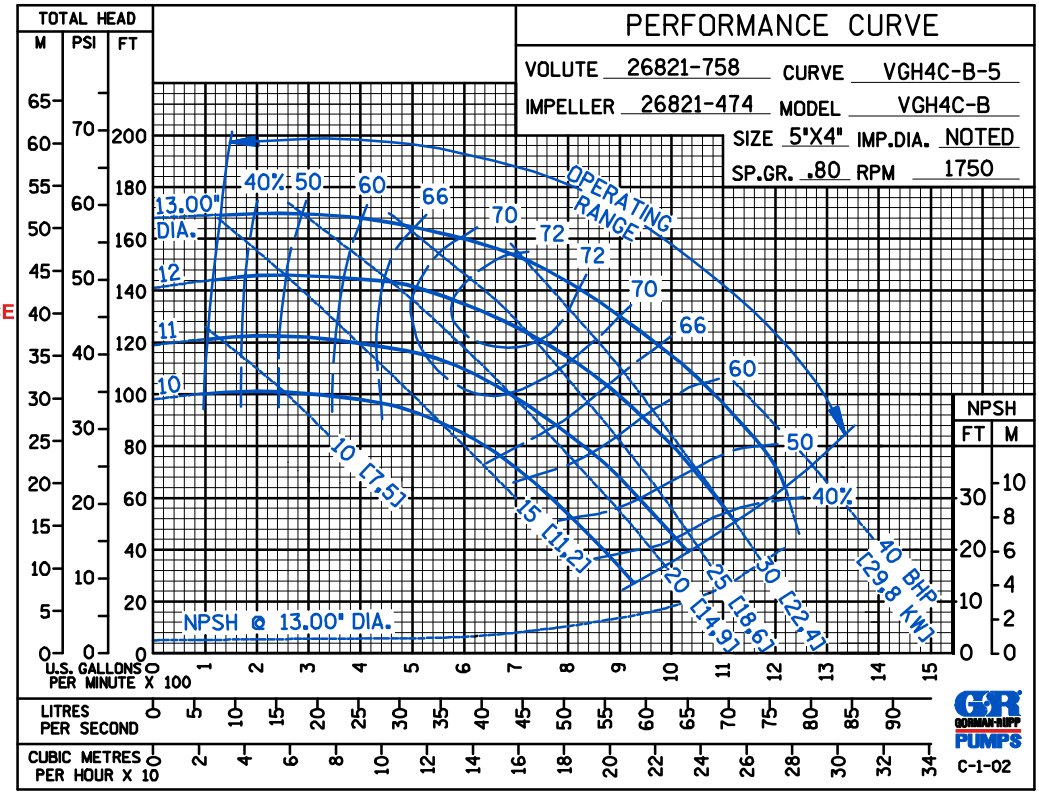


A B C E

PERFORMANCE BASED ON PETROLEUM



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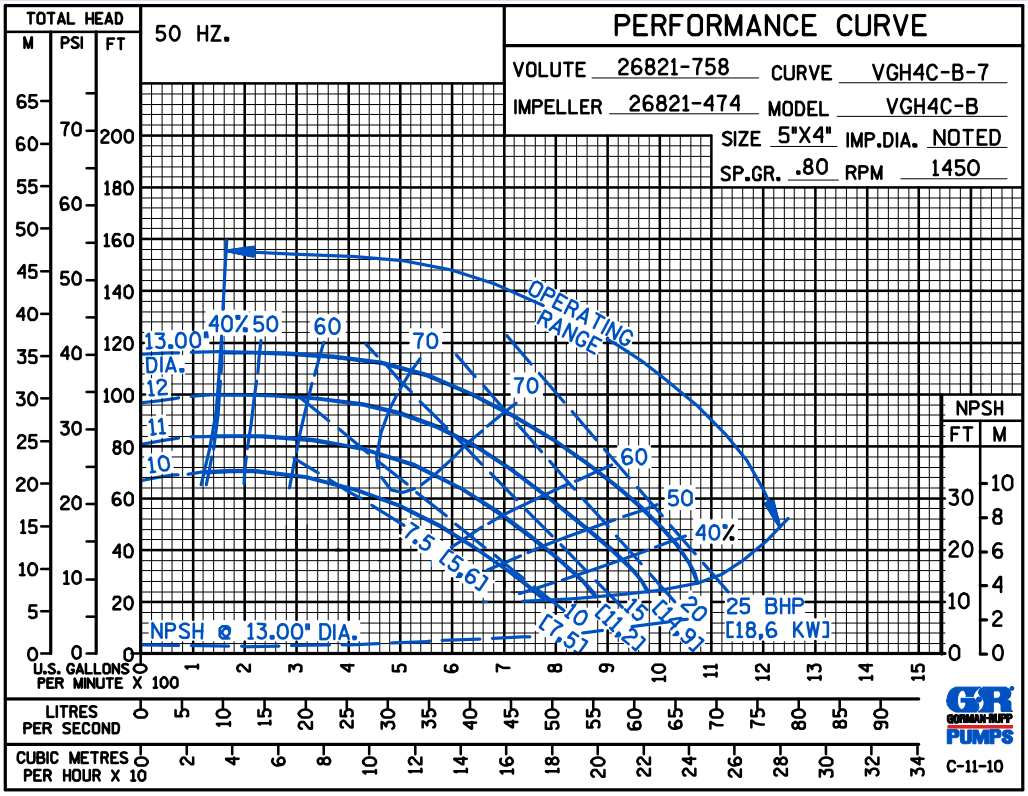
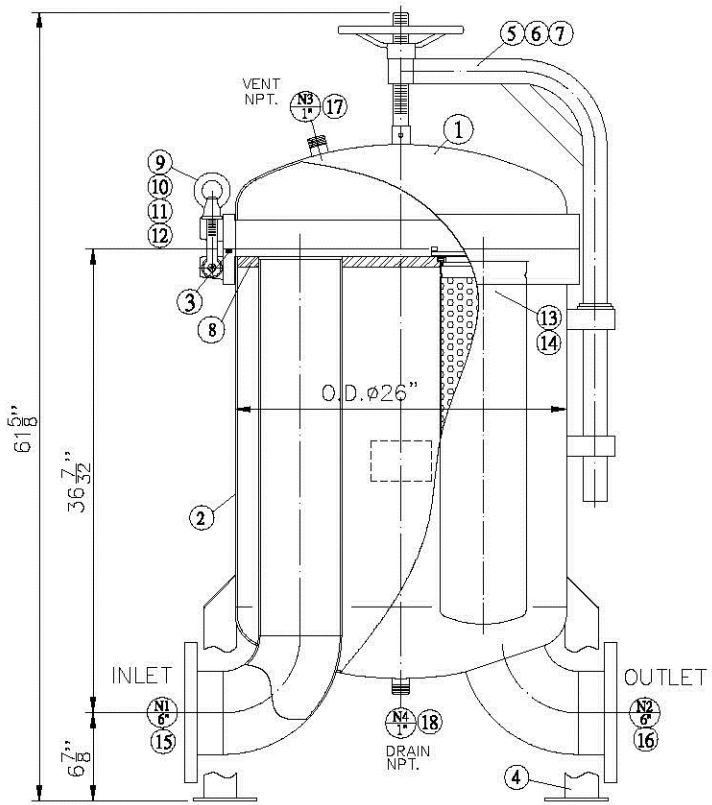
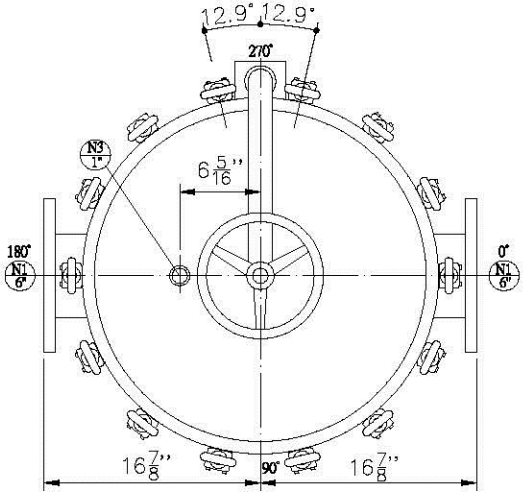
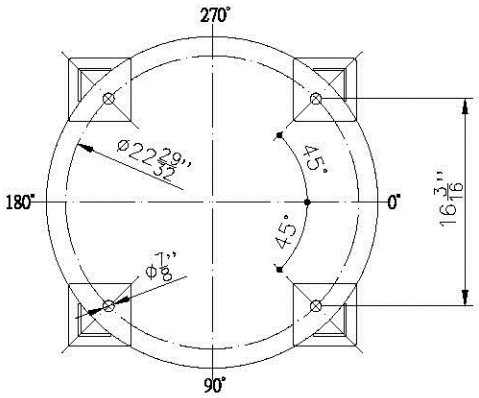




SIDE VIEW



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

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

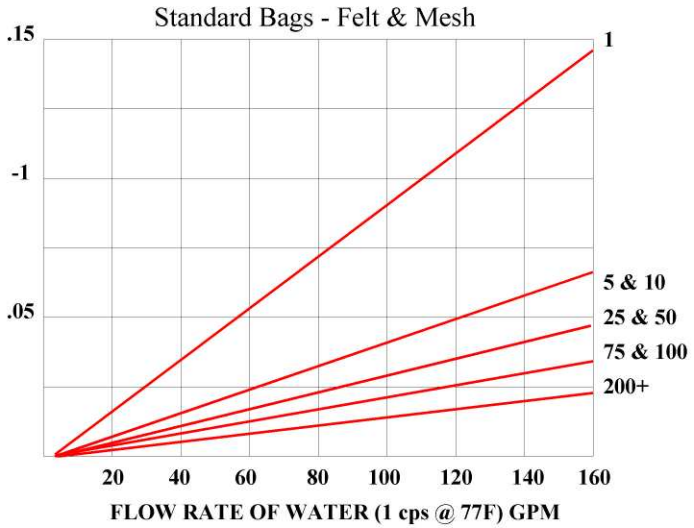
Optional Filter Media

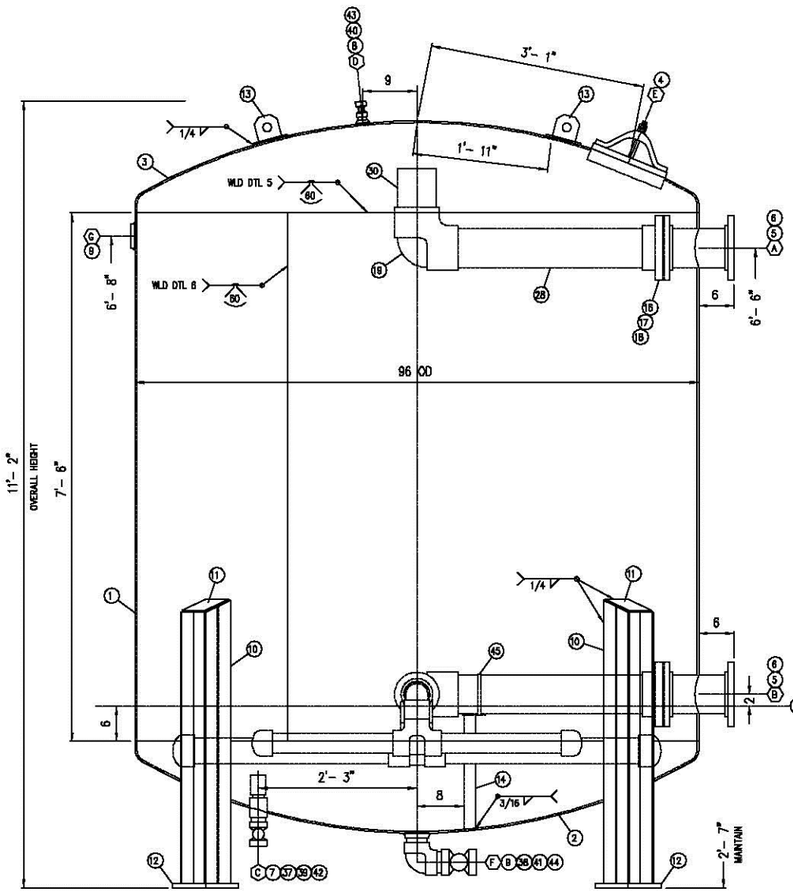
Felt: Nomex, Polyester, Polypropylene

Monofilament: Nylon, Polyester, Polypropylene

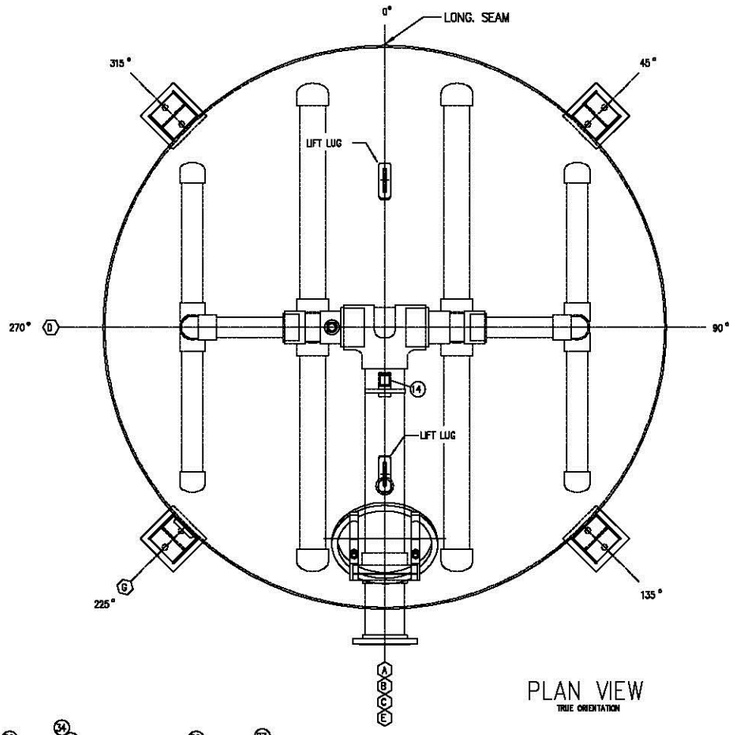
Multifilament: Nylon, Polyester

Polypropylene: Oil Removal

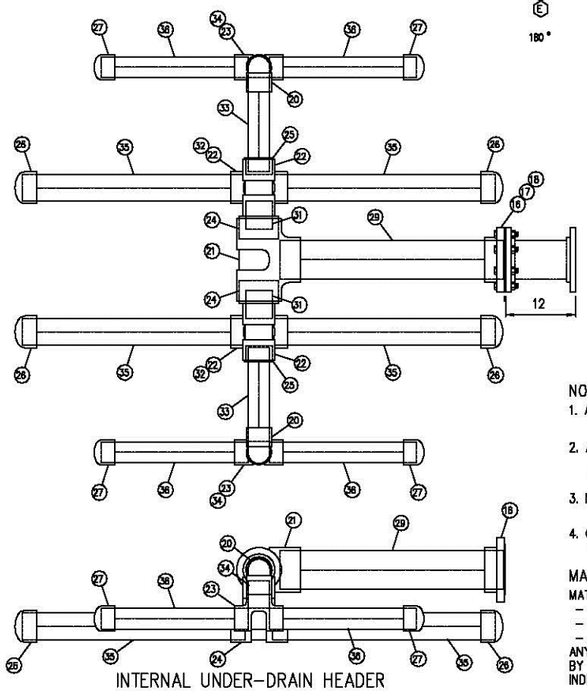




ELEVATION VIEW
NOT TRUE ORIENTATION



PLAN VIEW
TRUE ORIENTATION



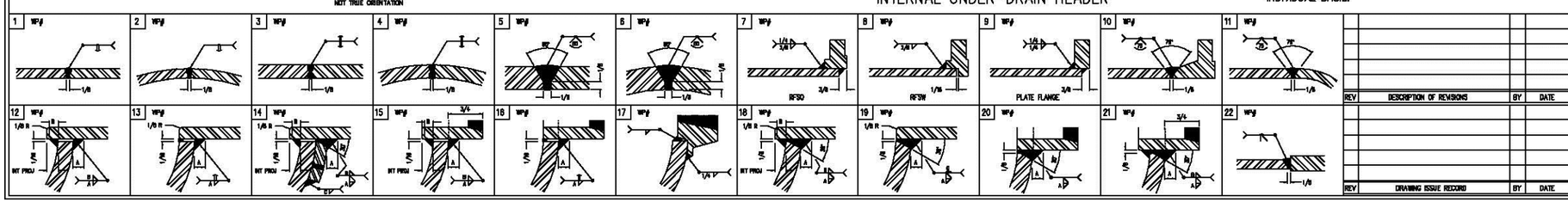
INTERNAL UNDER-DRAIN HEADER

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'– 6" 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	16"	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.

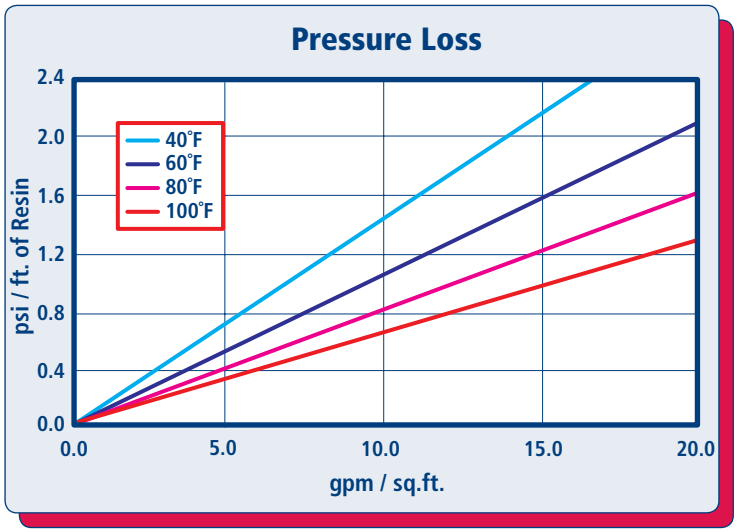
NSF/ANSI 44-61 CERTIFIED FOR MATERIAL SAFETY

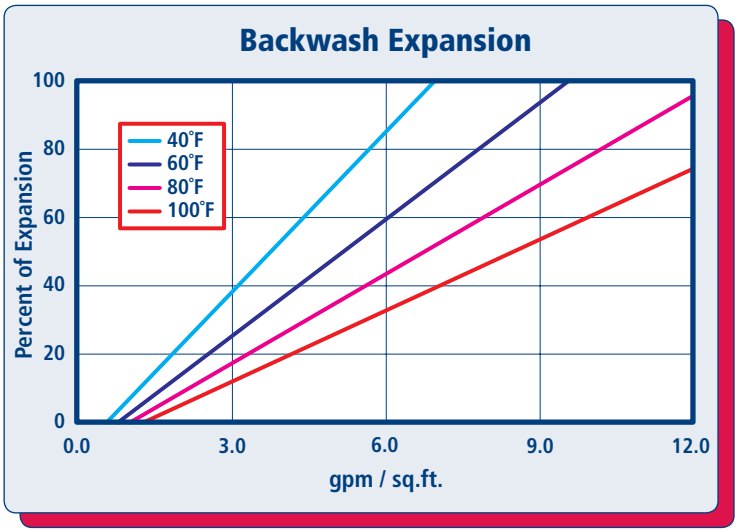
FEATURES & BENEFITS

- **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

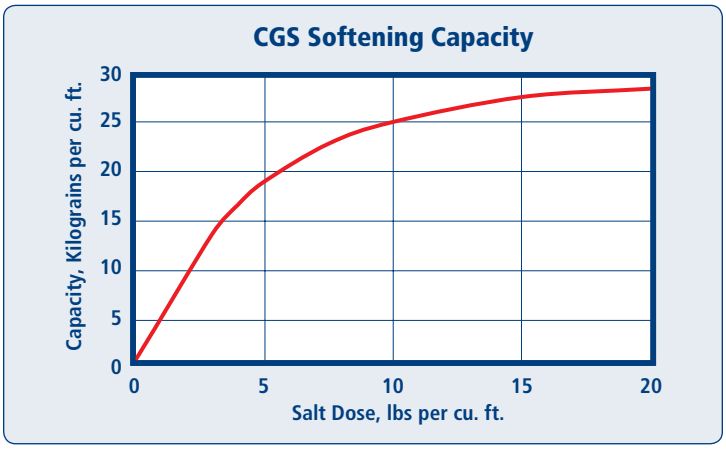
Maximum continuous temperature	
Sodium form	250˚F
Minimum bed depth	24 inches
Backwash expansion	25 to 50 percent
Maximum pressure loss	25 psi
Operating pH range	0 to 14 SU
Regenerant Concentration	
Salt cycle	10 to 15 percent NaCl
Regenerant level	4 to 15 lbs./cu.ft.
Regenerant flow rate.	0.5 to 1.5 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

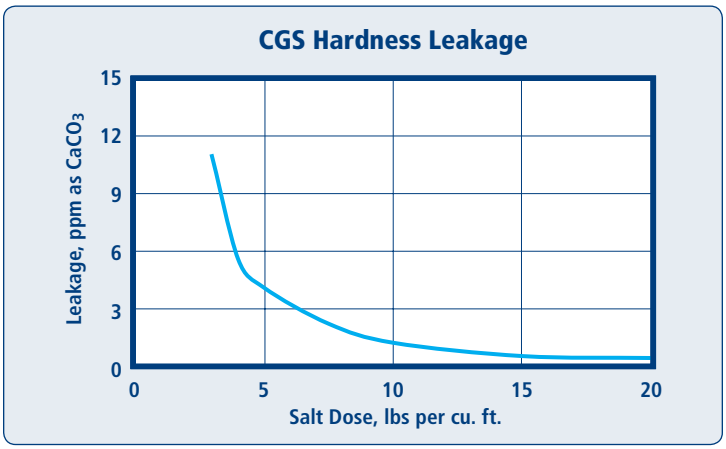
APPLICATIONS

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

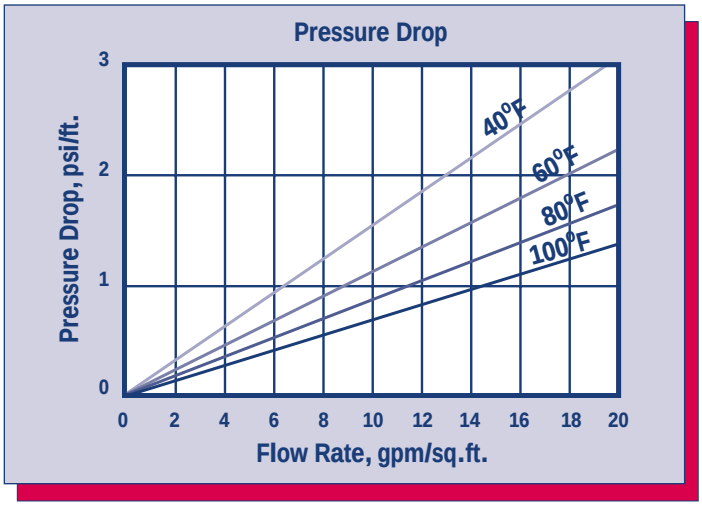
RESINTECH SBG1 is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *RESINTECH SBG1* is intended for use in all types of deionization systems and chemical processing applications.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

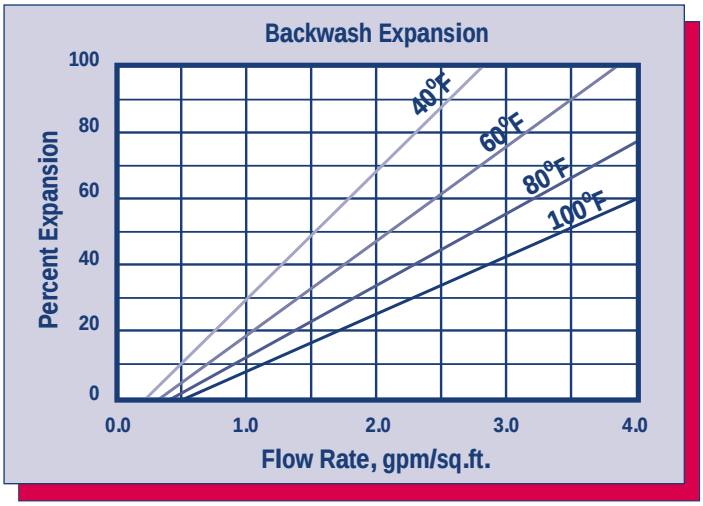
FEATURES & BENEFITS

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

APPLICATIONS

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

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

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

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

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

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

ZENNER PERFORMANCE
Cast Iron Turbine Meters
Sizes 2” through 12”

INTRODUCTION: ZENNER PERFORMANCE Turbine Meters are designed for applications where flows are usually moderate to high and occasionally low. They are used in measurement of potable cold water in commercial and industrial services where flows are in one direction.

OPERATION: Water flows through the turbine section which causes the rotor to turn proportionately to the quantity of water flowing through the meter. A drive magnet transmits the motion of the rotor to a driven magnet located within the hermetically sealed register. The magnet is connected to a gear train which translates the rotations into volume totalization displayed on the register dial face. The only moving parts in the meter are the rotor assembly and vertical shaft .

CONSTRUCTION: ZENNER PERFORMANCE Turbine Meters consist of three basic components: Cast Iron Epoxy Coated main case, measuring element, and sealed register. The measuring element assembly includes the rotor assembly, vertical shaft and a calibration vane which eliminates the need for calibration change gears.

MAINTENANCE: ZENNER PERFORMANCE Turbine Meters are engineered and manufactured to provide long-term service and operate virtually maintenance free. If necessary the universal measuring element (UME) can be removed from the main case for maintenance. Interchangeability of certain parts between like sized meters minimizes spare parts inventory.

CONFORMANCE: ZENNER PERFORMANCE Turbine Meters are tested and comply with AWWA C701 Class II performance standards.

STRAINERS: ZENNER PERFORMANCE recommends the use of a separate strainer upstream from the turbine meter. Strainers reduce the chance of damage to the rotor as well as the frequency in which it must be removed for inspection. The lack of a strainer may void the warranty of the turbine meter.

CONNECTIONS: Companion flanges for installation of meters on various pipe types and sizes are available in bronze or cast iron.

PMT04

PMT06

ZENNER PERFORMANCE
15280 Addison Rd #340, Addison, TX 75001, (972) 386-6611, Fax (972) 386-1814
www.zennerusa.com

MODEL		PMT02	PMT03	PMT04	PMT06	PMT08	PMT10	PMT12
SIZE		2"	3"	4"	6"	8"	10"	12"
Flow rate maximum intermittent	USGPM	400	550	1250	2500	4500	7000	8800
Maximum continuous	USGPM	200	450	1000	2000	3500	5500	6200
Optimum operating flow range	USGPM	3 - 200	5 - 550	10 - 1250	20 - 2500	30 - 4500	50 - 7000	90 - 8800
Low flow rate	USGPM	2	2-1/2	5	12	20	45	65
Start-up flow rate	USGPM	7/8	1-1/8	1-3/8	7-1/2	8	15	15
Maximum Working Pressure	P.S.I.	160	160	160	160	160	160	160
Maximum Temperature	Deg. F	140	140	140	140	140	140	140
Length	Inches	7-7/8	8-7/8	9-7/8	11-7/8	13-3/4	17-3/4	19-5/8
Height	Inches	9-1/2	10-1/4	11	12-7/8	14-1/4	19	20-1/4
Width	Inches	7	7-1/2	9	11	13-1/2	16	19
Weight	Pounds	24	32	38	84	126	225	255
Number of holes per flange		4	4	8	8	8	12	12

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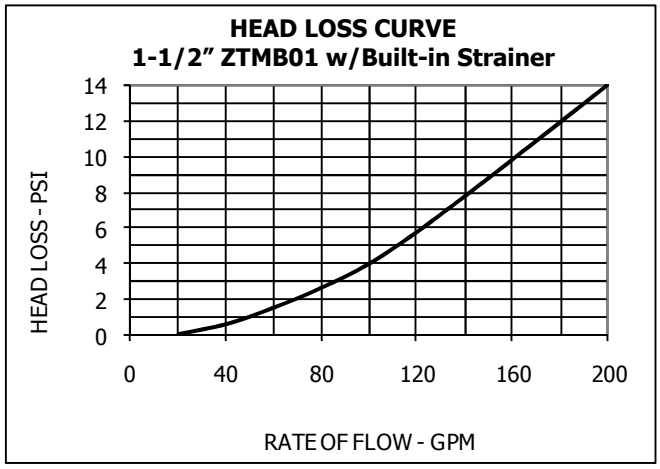
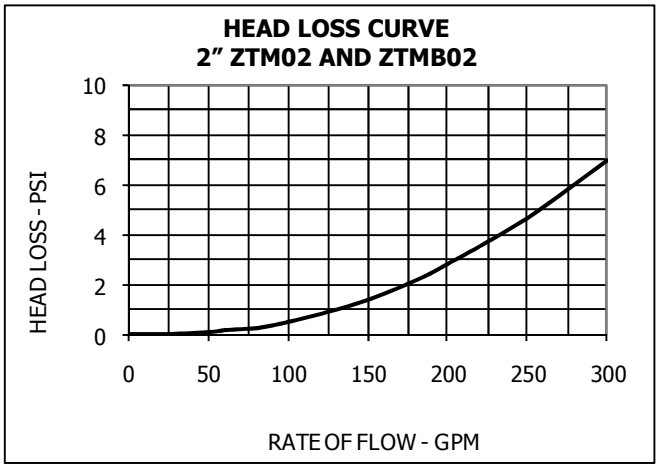
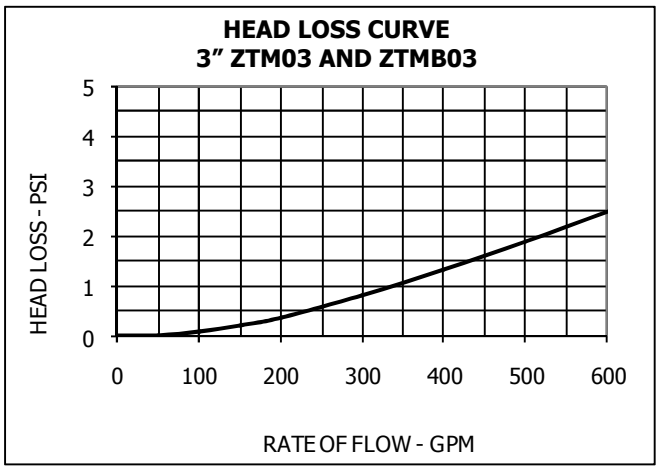
ZENNER ZTM and ZTMB Turbine Water Meters

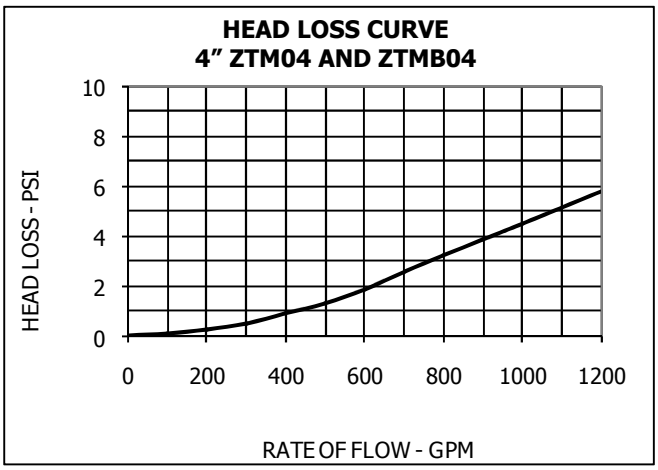
(Without Strainer)

Typical Head Loss Curves









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