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

March 25, 2022

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)**
North Reservoir Dam
Winchester, Massachusetts

Dear Sir/Madam:

On behalf of the T Ford Company Inc. (T Ford), Lockwood Remediation Technologies, LLC (LRT) has prepared this Notice of Intent (NOI) requesting a determination of coverage under the United States Environmental Protection Agency's (EPA's) Remediation General Permit (RGP), pursuant EPA's National Pollutant Discharge Elimination System (NPDES) program. This NOI was prepared in accordance with the general requirements of the NPDES RGP and related guidance documentation provided by EPA. The completed NOI Form is provided in **Appendix A**.

Site Information

This NOI has been prepared for the management of groundwater that will be generated during dewatering associated with construction activities at the Northern Reservoir Dam in Winchester, MA (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**. A map denoting the path of discharge to its final outfall at the Aberjona River is provided as **Figure 2A.**

Regulatory Status

RTN 3-0037044 was issued by MassDEP on September 15, 2021, for a release or threat of release of lead and benzo(a)pyrene at the site. These contaminants were detected in soil above RCS-1 soil standards. MassDEP issued a Notice of Responsibility to the Town of Winchester on October 14, 2021. No further information is currently available.

Work Summary

The work at the Site includes the renovation of the existing dam and construction of additional drainage features. To complete excavations in the dry, dewatering will be required to lower the groundwater table as work is being performed. To do this, a wellpoint dewatering system will be installed around the

excavation areas and supplemental sumps will be used within these areas as necessary. Water generated during dewatering (Source Water) will be pumped to a water treatment system prior to discharge to the dam's spillway. The discharge location is depicted on **Figures 2 and 2A**.

On March 11, 2022, LRT collected a representative sample of groundwater at the site from monitoring well MW-401 as well as a sample from the receiving water. 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 the NOI Form included within **Appendix A**, and a copy of the laboratory report is provided in **Appendix B**. Concentrations of Total Suspended Solids (TSS), Non-Halogenated Semi-Volatile Organic Compounds (SVOCs), and metals including 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 chemically aided settling, pH adjustment, metals precipitation, and 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 major system components, product information and Safety Data Sheets (SDS) are included in **Appendix C**.

Source water will be pumped to a treatment system with a design flow rate of up to 500 gallons per minute (gpm); the average effluent flow of the system is estimated to be 375 gpm, and the maximum flow will not exceed 500 gpm. Source water will enter two (2) weir tanks at the head of the system where coagulant and flocculant will be added, and the pH will be raised to approximately 8.0 to facilitate precipitation of the iron. From the weir tanks water will flow through one (1) 18,000-gallon clarifier before being pumped to a multi-bag filter skid (consisting of two multi-bag filter housings) and discharged to the approved discharge point.

Discharge from the water treatment system will pass through a flow/totalizer meter prior to discharge into the receiving water, as depicted on **Figure 2A**. Effluent sampling will correspond with this discharge location.

Consultation with Federal Services

LRT reviewed online electronic data viewers and databases from the Massachusetts Geographical Information System (MassGIS), the Massachusetts Division of Fisheries and Wildlife (MassWildlife; Natural Heritage and Endangered Species Program), and the U.S. National Parks Service Natural Historic Places (NPS). Based on this review, the Site, and the point where the proposed discharge reaches the receiving surface water body are not located within an Area of Critical Environmental Concern (ACEC). The Site and the proposed discharge point are not located within Habitats of Rare Wetland Wildlife,

Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or listed as a National Historic Place. Documentation is included in **Appendix D**.

Coverage under NPDES RGP

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP. On behalf of TFord, LRT is requesting coverage under the NPDES RGP for the discharge of treated wastewater to the Aberjona River in support of construction dewatering activities that are to take place at the Northern Reservoir Dam in Winchester, 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, TFord is considered the operator and has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications.

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

Sincerely,
Lockwood Remediation Technologies, LLC

Carlo Lombardo

Carlo Lombardo
Staff Scientist

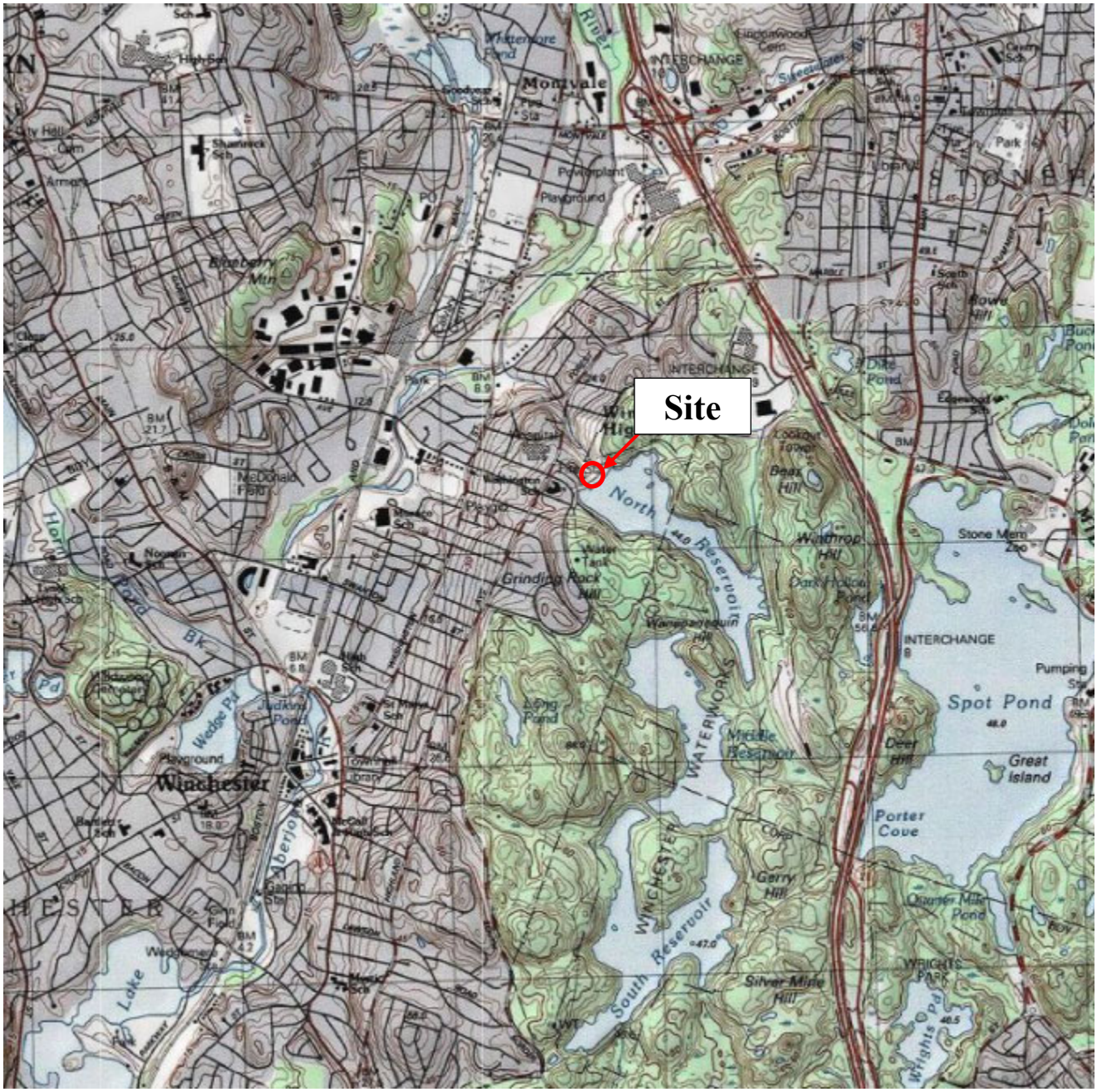
John J. Henry

John J. Henry, PE
Senior Project Manager

Encl: Figure 1 - Locus Plan
Figure 2 - Site Plan
Figure 2A – Outfall Location
Figure 3 - Water Treatment System Schematic
Appendix A - NOI Form
Appendix B – Laboratory Reports
Appendix C – Water Treatment System Cutsheets and SDSs
Appendix D – Supplementary Information

cc: Cathy Vakalopoulos – Massachusetts Department of Environmental Protection
Dan Galante – T Ford Company Inc.

Figures



Source: ArcGIS Map Viewer

Notes

1. Figure is not to scale.

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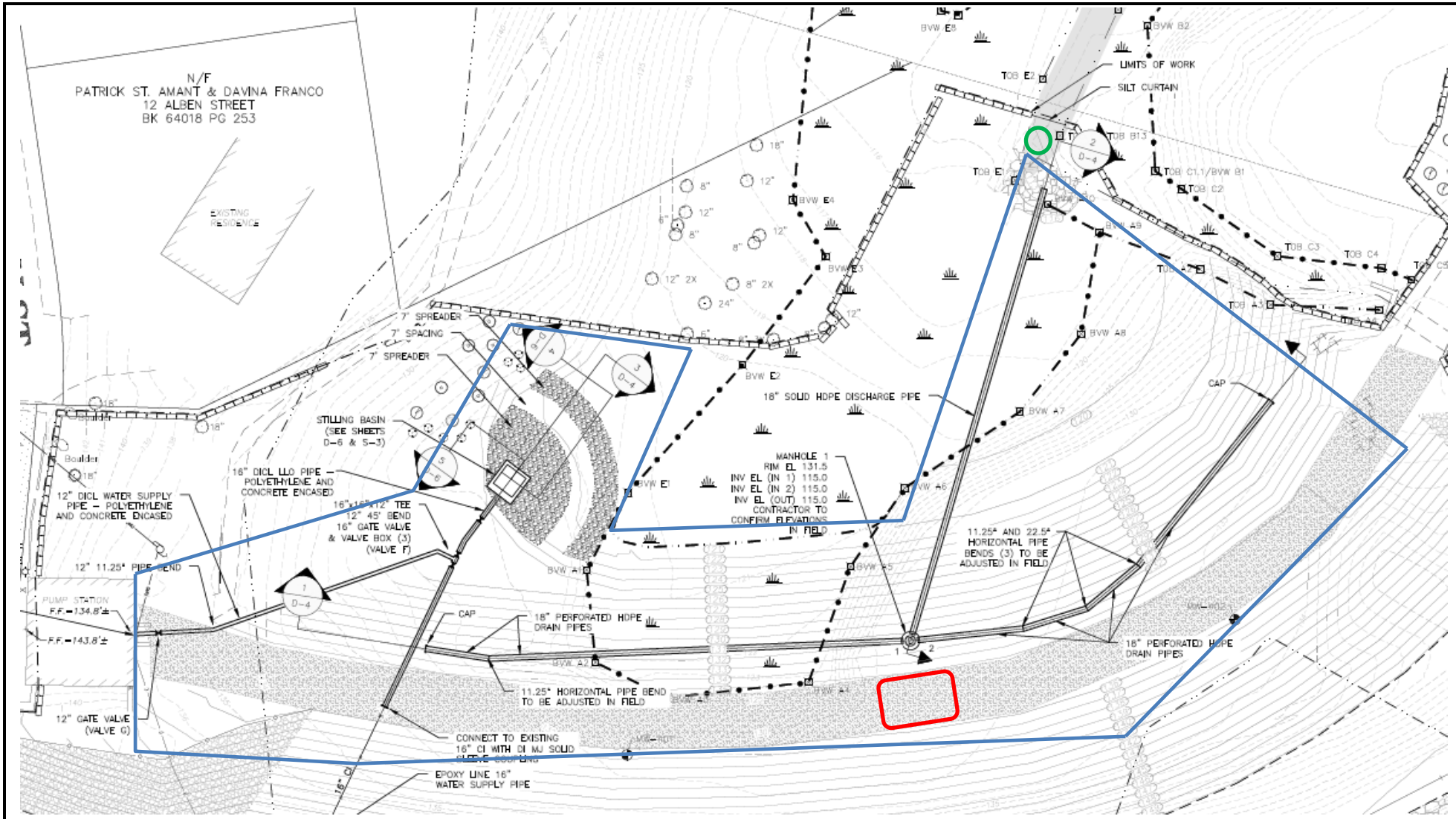
Figure 1 – Locus Plan
North Reservoir Dam
Winchester, MA



Notes

1. Figure is not to scale.

Key

Discharge Location

Approximate Water Treatment System Location

Approximate Dewatering Area

Lockwood Remediation Technologies LLC

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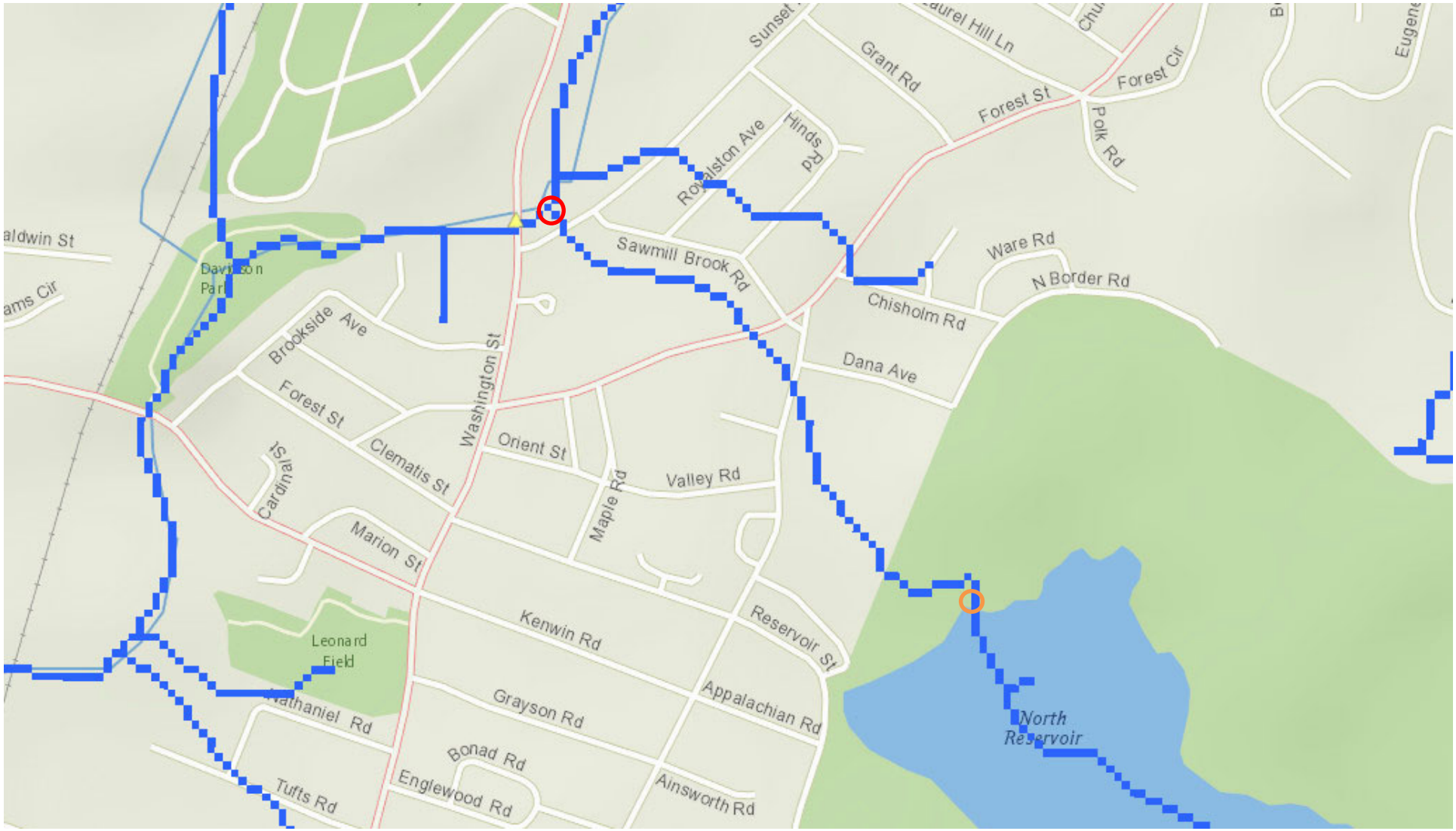
Figure 2 – Site Plan
North Reservoir Dam
Winchester, MA



Notes

1. Figure is not to scale.

Key

Outfall Location

Discharge Location

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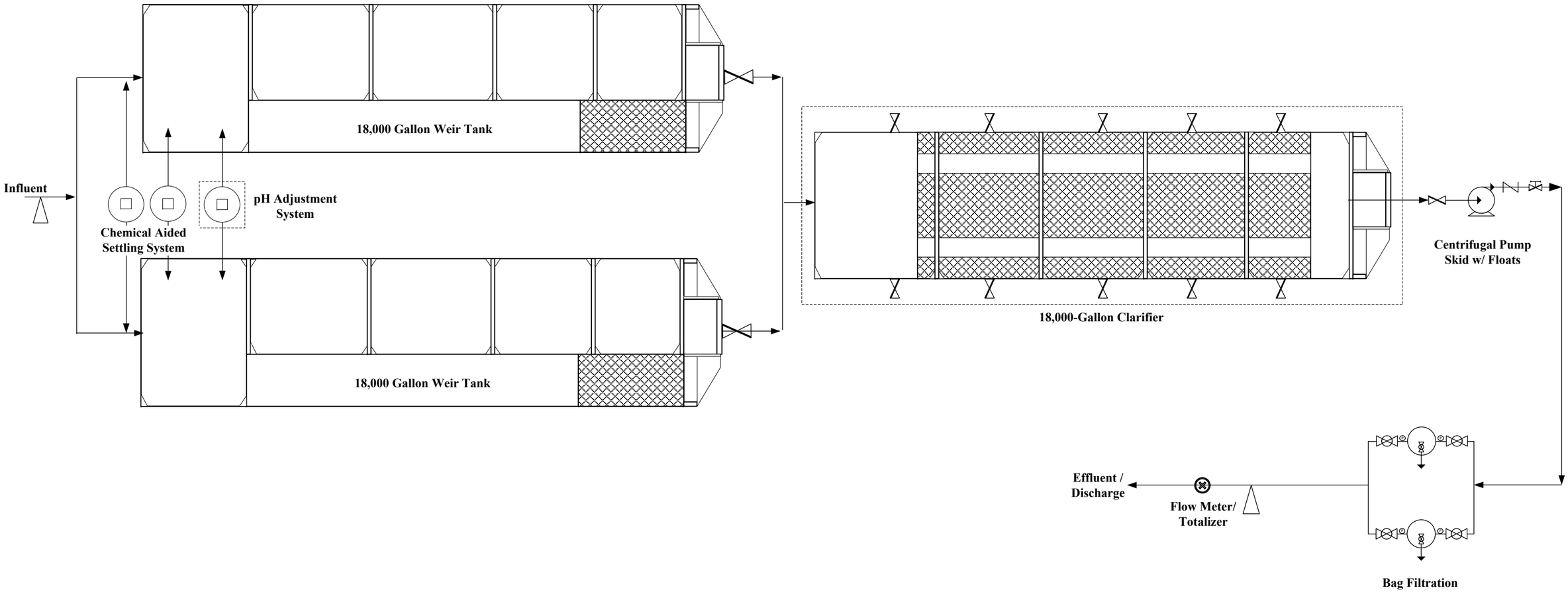
Figure 2A – Outfall Location
North Reservoir Dam
Winchester, MA



Key:

- Piping/Hose
- Sample Port
- Ball Valve
- Butterfly Valve
- Pressure Gauge
- 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

DESIGNED BY: LRT **DRAWN BY:** JHJ

CHECKED BY: **DATE: 03/10/2022**

Water Treatment System Schematic

North Reservoir Dam
Winchester, MA

PROJECT No. 2-2371

FIGURE No. 3

Appendix A

NOI 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:
Winchester Dam</td><td colspan="3">Site address: 1 Hillcrest Parkway
Street:</td></tr>
<tr><td>City: Winchester</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td rowspan="4">2. Site owner
Town of Winchester

Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Margaret White</td></tr>
<tr><td colspan="2">Telephone: 781-721-7120</td><td>Email:</td></tr>
<tr><td colspan="3">Mailing address: 71 Mt. Vernon Street
Street:</td></tr>
<tr><td>City: Winchester</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
TFord Company, Inc.</td><td colspan="3">Contact Person: Dan Galante</td></tr>
<tr><td colspan="2">Telephone: 508-726-4086</td><td>Email: dan@tford.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 124 Tenney Street</td></tr>
<tr><td>City: Georgetown</td><td>State: MA</td><td>Zip: 01833</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):
☐ 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):
Aberjona River	MA71-01	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: N/A

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. Physical substrate habitat alterations, Ammonia, Aquatic Macroinvertabrate Bioassessment, Arsenic, E. Coli, Oxygen Dissolved, Phosphorous, Sediment

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.	0.00466 MGD
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.	1.0065

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

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

C. Source water information:

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

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

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

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): 001	Outfall location(s): (Latitude, Longitude) 42.46513, -71.11815
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Discharge from the treatment system will be discharged to the dam's spillway with a final outfall in the receiving water (Aberjona River). ☐ A private storm sewer system ☐ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ☐ Yes ■ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ■ No, if so, explain, with an estimated timeframe for obtaining permission: N/A Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): April/2022-December/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	

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

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

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

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✔	1	350.1	100	0.14	0.14	Report mg/L	---
Chloride		✔	1	300.0	25	55000	55000	Report µg/l	---
Total Residual Chlorine	✔		1	4500CL		<0.02	<0.02	0.2 mg/L	11
Total Suspended Solids		✔	1	2540D	1000	46000	46000	30 mg/L	---
Antimony	✔		1	200.7	1.0	<1.0	<1.0	206 µg/L	644
Arsenic	✔		1	3113B	2.5	<2.5	<2.5	104 µg/L	10
Cadmium	✔		1	200.7	1.0	<1.0	<1.0	10.2 µg/L	0.2154
Chromium III		✔	1	200.7	2.0	2.2	2.2	323 µg/L	66.9
Chromium VI	✔		1	3500Cr	10	<10	<10	323 µg/L	11.5
Copper		✔	1	200.7	2.0	2.1	2.1	242 µg/L	7.2
Iron		✔	1	200.7	10	3120	3120	5,000 µg/L	1006
Lead	✔		1	200.7	2.0	<2.0	<2.0	160 µg/L	2.14
Mercury	✔		1	245.1	0.2	<0.2	<0.2	0.739 µg/L	0.91
Nickel	✔		1	200.7	5.0	<5.0	<5.0	1,450 µg/L	40.2
Selenium	✔		1	3113B	5.0	<5.0	<5.0	235.8 µg/L	5.0
Silver	✔		1	200.7	1.0	<1.0	<1.0	35.1 µg/L	2.2
Zinc		✔	1	200.7	5.0	17.1	17.1	420 µg/L	92.1
Cyanide	✔		1	4500CN	5.0	<5.0	<5.0	178 mg/L	5.2
B. Non-Halogenated VOCs									
Total BTEX	✔		1			<0.2	<0.2	100 µg/L	---
Benzene	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	---
1,4 Dioxane	✔		1	8270D	0.250	<0.250	<0.250	200 µg/L	---
Acetone		✔	1	524.2	5.0	7.0	7.0	7.97 mg/L	---
Phenol	✔		1	420.1	50	<50	<50	1,080 µg/L	302

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		1	524.2	0.3	<0.3	<0.3	4.4 µg/L	1.6
1,2 Dichlorobenzene	✔		1	524.2	0.5	<0.5	<0.5	600 µg/L	---
1,3 Dichlorobenzene	✔		1	524.2	0.5	<0.5	<0.5	320 µg/L	---
1,4 Dichlorobenzene	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	---
Total dichlorobenzene	✔		1			<0.5	<0.5	763 µg/L in NH	---
1,1 Dichloroethane	✔		1	524.2	0.5	<0.5	<0.5	70 µg/L	---
1,2 Dichloroethane	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	---
1,1 Dichloroethylene	✔		1	524.2	0.5	<0.5	<0.5	3.2 µg/L	---
Ethylene Dibromide	✔		1	504.1	0.015	<0.015	<0.015	0.05 µg/L	---
Methylene Chloride	✔		1	524.2	0.5	<0.5	<0.5	4.6 µg/L	---
1,1,1 Trichloroethane	✔		1	524.2	0.5	<0.5	<0.5	200 µg/L	---
1,1,2 Trichloroethane	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	---
Trichloroethylene	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	---
Tetrachloroethylene	✔		1	524.2	0.5	<0.5	<0.5	5.0 µg/L	3.3
cis-1,2 Dichloroethylene	✔		1	524.2	0.5	<0.5	<0.5	70 µg/L	---
Vinyl Chloride	✔		1	524.2	0.2	<0.2	<0.2	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates		✔	1		0.02	0.68	0.68	190 µg/L	---
Diethylhexyl phthalate	✔		1	625.1	0.19	<0.19	<0.19	101 µg/L	2.2
Total Group I PAHs		✔	1		0.02	0.10	0.10	1.0 µg/L	---
Benzo(a)anthracene		✔	1	625.1	0.02	0.02	0.02	As Total PAHs	0.0038
Benzo(a)pyrene		✔	1	625.1	0.02	0.02	0.02		0.0038
Benzo(b)fluoranthene		✔	1	625.1	0.02	0.02	0.02		0.0038
Benzo(k)fluoranthene		✔	1	625.1	0.02	0.02	0.02		0.0038
Chrysene		✔	1	625.1	0.01	0.02	0.02		0.0038
Dibenzo(a,h)anthracene	✔		1	625.1	0.02	<0.02	<0.02		0.0038
Indeno(1,2,3-cd)pyrene	✔		1	625.1	0.02	<0.02	<0.02		0.0038

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✔	1		0.02	0.05	0.05	100 µg/L	---
Naphthalene	✔		1	625.1	0.04	<0.04	<0.04	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		1	608.3		<0.10	<0.10	0.000064 µg/L	---
Pentachlorophenol	✔		1		0.015	<0.015	<0.015	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		1	1664A	4.7	<4.7	<4.8	5.0 mg/L	---
Ethanol	✔		1	ASTM	10	<10	<10	Report mg/L	---
Methyl-tert-Butyl Ether	✔		1	524.2	0.5	<0.5	<0.5	70 µg/L	20
tert-Butyl Alcohol	✔		1	524.2	25.0	<25.0	<25.0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		1	524.2	1.0	<1.0	<1.0	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
pH		✔				8.0	8.0		
Receiving Water:									
Hardness		✔				19300	19300		
pH		✔				7.8	7.8		
Ammonia		✔				0.12	0.12		
Iron		✔				103	103		
Zinc		✔				14.6	14.6		

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:

N/A

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 rate of up to 500 gallons per minute (gpm); the average effluent flow of the system is estimated to be 375 gpm, and the maximum flow will not exceed 500 gpm. Source water will enter two (2) weir tanks at the head of the system where coagulant and flocculant will be added, and the pH will be raised to approximately 8.0 to facilitate precipitation of the iron. From the weir tanks water will flow through one (1) 18,000-gallon clarifier before being pumped to a multi-bag filter skid (consisting of two multi-bag filter housings) and discharged through a flow/totalizer meter into the dam's spillway with a final outfall in the Aberjona River.

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: N/A

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: N/A	500
Provide the proposed maximum effluent flow in gpm.	500
Provide the average effluent flow in gpm.	375
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	N/A

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:
N/A

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

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

G. Endangered Species Act eligibility determination

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

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

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

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

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

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

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

H. National Historic Preservation Act eligibility determination

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

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

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

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

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

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

I. Supplemental information

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

Cut Sheets, Site Maps, Analytical Data, and reports are all located in the Appendices of the application for review.

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

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

J. Certification requirement

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

BMPP certification statement:	A BMPP will be developed and maintained to meet the requirements of this permit. The BMPP will be implemented on-site prior to the initiation of discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☐ No ☐ NA ■
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature: 	Date: 3/28/22
Print Name and Title: Daniel Galante, Senior Vice President	

Appendix B

Laboratory Data

CERTIFICATE OF ANALYSIS

John Henry
Lockwood Remediation Technologies LLC
89 Crawford Street
Leominster, MA 01453

RE: Winchester Dam (2-2371)
ESS Laboratory Work Order Number: 22C0404

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

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:21 pm, Mar 17, 2022

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

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

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

SAMPLE RECEIPT

The following samples were received on March 11, 2022 for the analyses specified on the enclosed Chain of Custody Record.

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

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

Lab Number	Sample Name	Matrix	Analysis
22C0404-01	MW-401	Ground Water	1664A, 200.7, 245.1, 2540D, 300.0, 3113B, 350.1, 3500Cr B-2009, 420.1, 4500 CN CE, 4500Cl D, 504.1, 524.2, 608.3, 625.1 SIM, 8270D SIM, ASTM D3695, CALC
22C0404-02	Recieving Water Freshwater	Ground Water	200.7, 245.1, 3113B, 350.1, 3500Cr B-2009, CALC

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

PROJECT NARRATIVE

625.1(SIM) Semi-Volatile Organic Compounds

22C0404-01 **Present in Method Blank (B).**
Butylbenzylphthalate

D2C0240-CCV1 **Calibration required quadratic regression (Q).**
2,4,6-Tribromophenol (117% @ 80-120%), bis(2-Ethylhexyl)phthalate (97% @ 80-120%), Di-n-octylphthalate (96% @ 80-120%)

D2C0274-CCV1 **Calibration required quadratic regression (Q).**
2,4,6-Tribromophenol (104% @ 80-120%), bis(2-Ethylhexyl)phthalate (88% @ 80-120%), Di-n-octylphthalate (91% @ 80-120%)

DC21103-BS1 **Blank Spike recovery is above upper control limit (B+).**
Butylbenzylphthalate (145% @ 40-140%)

DC21103-BSD1 **Blank Spike recovery is above upper control limit (B+).**
Butylbenzylphthalate (155% @ 40-140%)

Classical Chemistry

22C0404-01 **The maximum holding time listed in 40 CFR Part 136 Table II for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

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

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

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Dissolved Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Arsenic	ND (2.5)		3113B		5	KJK	03/17/22 0:11	100	10	DC21406
Cadmium	ND (1.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Chromium	ND (2.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Copper	ND (2.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Iron	**201** (10.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Lead	ND (2.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Mercury	ND (0.20)		245.1		1	YIV	03/16/22 14:48	20	40	DC21462
Nickel	ND (5.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Selenium	ND (5.0)		3113B		5	KJK	03/16/22 19:42	100	10	DC21406
Silver	ND (1.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406
Zinc	**20.7** (5.0)		200.7		1	KJK	03/15/22 19:23	100	10	DC21406

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Arsenic	ND (2.5)		3113B		5	KJK	03/16/22 23:30	100	10	DC21406
Cadmium	ND (1.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Chromium	**2.2** (2.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Chromium III	ND (10.0)		200.7		1	EAM	03/15/22 19:19	1	1	[CALC]
Copper	**2.1** (2.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Iron	**3120** (10.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Lead	ND (2.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Mercury	ND (0.2)		245.1		1	YIV	03/16/22 14:41	20	40	DC21462
Nickel	ND (5.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Selenium	ND (5.0)		3113B		5	KJK	03/16/22 18:55	100	10	DC21406
Silver	ND (1.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406
Total Hardness	**73200** (82.3)		CALC		1	KJK	03/15/22 19:19	1	1	[CALC]
Zinc	**17.1** (5.0)		200.7		1	KJK	03/15/22 19:19	100	10	DC21406

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 25
Final Volume: 25
Extraction Method: 524.2

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

524.2 Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,1,2-Trichloroethane	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,1-Dichloroethane	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,1-Dichloroethene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,2-Dichlorobenzene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,2-Dichloroethane	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,3-Dichlorobenzene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
1,4-Dichlorobenzene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Acetone	**7.0** (5.0)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Benzene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Carbon Tetrachloride	ND (0.3)		524.2		1	03/14/22 12:57	D2C0268	DC21428
cis-1,2-Dichloroethene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Ethylbenzene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Methyl tert-Butyl Ether	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Methylene Chloride	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Naphthalene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Tertiary-amyl methyl ether	ND (1.0)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Tertiary-butyl Alcohol	ND (25.0)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Tetrachloroethene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Toluene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Trichloroethene	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Vinyl Chloride	ND (0.2)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Xylene O	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428
Xylene P,M	ND (0.5)		524.2		1	03/14/22 12:57	D2C0268	DC21428

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*88 %*		*80-120*
Surrogate: 4-Bromofluorobenzene	*90 %*		*80-120*

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 1030
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: JLG
Prepared: 3/11/22 16:49

608.3 Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1221	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1232	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1242	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1248	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1254	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1260	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1262	ND (0.10)		608.3		1	03/14/22 14:12		DC21007
Aroclor 1268	ND (0.10)		608.3		1	03/14/22 14:12		DC21007

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*78 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*63 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*68 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 1030
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 3/11/22 16:49

625.1(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)	0.04	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Acenaphthylene	ND (0.19)	0.03	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Anthracene	ND (0.19)	0.03	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Benzo(a)anthracene	**J 0.02** (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Benzo(a)pyrene	**J 0.02** (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Benzo(b)fluoranthene	**J 0.02** (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Benzo(g,h,i)perylene	ND (0.19)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Benzo(k)fluoranthene	**J 0.02** (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
bis(2-Ethylhexyl)phthalate	ND (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Butylbenzylphthalate	**B, J 0.25** (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Chrysene	**J 0.02** (0.05)	0.01	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Dibenzo(a,h)Anthracene	ND (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Diethylphthalate	ND (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Dimethylphthalate	ND (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Di-n-butylphthalate	**J 0.43** (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Di-n-octylphthalate	ND (2.43)	0.19	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Fluoranthene	**J 0.03** (0.19)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Fluorene	ND (0.19)	0.03	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Indeno(1,2,3-cd)Pyrene	ND (0.05)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Naphthalene	ND (0.19)	0.04	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Phenanthrene	ND (0.19)	0.04	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103
Pyrene	**J 0.02** (0.19)	0.02	625.1 SIM		1	03/15/22 0:40	D2C0274	DC21103

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*34 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*42 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*48 %*		*30-130*
Surrogate: Nitrobenzene-d5	*56 %*		*30-130*
Surrogate: p-Terphenyl-d14	*75 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 500
Final Volume: 0.5
Extraction Method: 3535A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: TAJ
Prepared: 3/11/22 15:38

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,4-Dioxane	ND (0.250)		8270D SIM		1	03/15/22 0:08	D2C0274	DC21041

	%Recovery	Qualifier	Limits
Surrogate: 1,4-Dioxane-d8	*61 %*		*15-115*

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.14** (0.10)		350.1		1	JLK	03/15/22 16:19	mg/L	DC21451
Chloride	**55000** (5000)		300.0		10	EEM	03/14/22 16:53	ug/L	DC21423
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	EAM	03/11/22 17:45	ug/L	DC21136
Phenols	ND (50)		420.1		1	EAM	03/15/22 16:17	ug/L	DC21543
Total Cyanide	ND (5.00)		4500 CN CE		1	EEM	03/14/22 12:20	ug/L	DC21421
Total Petroleum Hydrocarbon	ND (4.7)		1664A		1	LAB	03/14/22 14:25	mg/L	DC21413
Total Residual Chlorine	ND (20.0)		4500Cl D		1	JLK	03/11/22 19:50	ug/L	DC21148
Total Suspended Solids	**46** (5)		2540D		1	CCP	03/14/22 16:22	mg/L	DC21441

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: DMC
Prepared: 3/15/22 13:26

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2-Dibromo-3-Chloropropane	ND (0.015)		504.1		1	03/15/22 14:26		DC21511
1,2-Dibromoethane	ND (0.015)		504.1		1	03/15/22 14:26		DC21511

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*99 %*		*30-150*
Surrogate: Pentachloroethane [2C]	*97 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: MW-401
Date Sampled: 03/11/22 08:20
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MJV
Prepared: 3/16/22 8:00

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		ASTM D3695		1	MJV	03/16/22 11:36		DC21601

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: Recieving Water Freshwater
Date Sampled: 03/11/22 08:15
Percent Solids: N/A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Arsenic	ND (2.5)		3113B		5	KJK	03/16/22 23:36	100	10	DC21406
Cadmium	ND (1.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Chromium	ND (2.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Chromium III	ND (10.0)		200.7		1	EAM	03/15/22 19:25	1	1	[CALC]
Copper	ND (2.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Iron	**103** (10.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Lead	ND (2.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Mercury	ND (0.2)		245.1		1	YIV	03/16/22 14:44	20	40	DC21462
Nickel	ND (5.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Selenium	ND (5.0)		3113B		5	KJK	03/16/22 19:19	100	10	DC21406
Silver	ND (1.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406
Total Hardness	**19300** (82.3)		CALC		1	KJK	03/15/22 19:25	1	1	[CALC]
Zinc	**14.6** (5.0)		200.7		1	KJK	03/15/22 19:25	100	10	DC21406

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam
Client Sample ID: Recieving Water Freshwater
Date Sampled: 03/11/22 08:15
Percent Solids: N/A

ESS Laboratory Work Order: 22C0404
ESS Laboratory Sample ID: 22C0404-02
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.12** (0.10)		350.1		1	JLK	03/15/22 16:22	mg/L	DC21451
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	EAM	03/11/22 17:45	ug/L	DC21136

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch DC21406 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Arsenic	ND	0.5	ug/L							
Cadmium	ND	1.0	ug/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Nickel	ND	5.0	ug/L							
Selenium	ND	1.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Antimony	ND	5.0	ug/L							
Arsenic	ND	0.5	ug/L							
Cadmium	ND	1.0	ug/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Nickel	ND	5.0	ug/L							
Selenium	ND	1.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
LCS										
Antimony	54.9	5.0	ug/L	50.00		110	85-115			
Cadmium	26.3	1.0	ug/L	25.00		105	85-115			
Chromium	54.5	2.0	ug/L	50.00		109	85-115			
Copper	55.2	2.0	ug/L	50.00		110	85-115			
Iron	270	10.0	ug/L	250.0		108	85-115			
Lead	56.5	2.0	ug/L	50.00		113	80-120			
Nickel	57.1	5.0	ug/L	50.00		114	85-115			
Silver	27.3	1.0	ug/L	25.00		109	85-115			
Zinc	57.5	5.0	ug/L	50.00		115	85-115			
LCS										
Arsenic	45.9	12.5	ug/L	50.00		92	85-115			
Selenium	99.3	25.0	ug/L	100.0		99	85-115			
Batch DC21462 - 245.1/7470A										
Blank										
Mercury	ND	0.20	ug/L							
Blank										
Mercury	ND	0.20	ug/L							
Blank										
Mercury	ND	0.20	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Dissolved Metals										
Batch DC21462 - 245.1/7470A										
LCS										
Mercury	5.50	0.20	ug/L	6.042		91	85-115			
LCS Dup										
Mercury	5.56	0.20	ug/L	6.042		92	85-115	1	20	
Total Metals										
Batch DC21406 - 3005A/200.7										
Blank										
Antimony	ND	5.0	ug/L							
Cadmium	ND	1.0	ug/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	2.0	ug/L							
Copper	ND	2.0	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	2.0	ug/L							
Magnesium	ND	0.020	mg/L							
Nickel	ND	5.0	ug/L							
Silver	ND	1.0	ug/L							
Zinc	ND	5.0	ug/L							
Blank										
Arsenic	ND	0.5	ug/L							
Selenium	ND	1.0	ug/L							
LCS										
Antimony	54.9	5.0	ug/L	50.00		110	85-115			
Cadmium	26.3	1.0	ug/L	25.00		105	85-115			
Calcium	0.519	0.060	mg/L	0.5000		104	85-115			
Chromium	54.5	2.0	ug/L	50.00		109	85-115			
Copper	55.2	2.0	ug/L	50.00		110	85-115			
Iron	270	10.0	ug/L	250.0		108	85-115			
Lead	56.5	2.0	ug/L	50.00		113	85-115			
Magnesium	0.571	0.020	mg/L	0.5000		114	85-115			
Nickel	57.1	5.0	ug/L	50.00		114	85-115			
Silver	27.3	1.0	ug/L	25.00		109	85-115			
Zinc	57.5	5.0	ug/L	50.00		115	85-115			
LCS										
Arsenic	45.9	12.5	ug/L	50.00		92	85-115			
Selenium	99.3	25.0	ug/L	100.0		99	85-115			
Batch DC21462 - 245.1/7470A										
Blank										
Mercury	ND	0.2	ug/L							
LCS										
Mercury	5.5	0.2	ug/L	6.042		91	85-115			
LCS Dup										

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DC21462 - 245.1/7470A										
Mercury	5.6	0.2	ug/L	6.042		92	85-115	1	20	
524.2 Volatile Organic Compounds										
Batch DC21428 - 524.2										
Blank										
1,1,1-Trichloroethane	ND	0.5	ug/L							
1,1,2-Trichloroethane	ND	0.5	ug/L							
1,1-Dichloroethane	ND	0.5	ug/L							
1,1-Dichloroethene	ND	0.5	ug/L							
1,2-Dichlorobenzene	ND	0.5	ug/L							
1,2-Dichloroethane	ND	0.5	ug/L							
1,3-Dichlorobenzene	ND	0.5	ug/L							
1,4-Dichlorobenzene	ND	0.5	ug/L							
Acetone	ND	5.0	ug/L							
Benzene	ND	0.5	ug/L							
Carbon Tetrachloride	ND	0.3	ug/L							
cis-1,2-Dichloroethene	ND	0.5	ug/L							
Ethylbenzene	ND	0.5	ug/L							
Methyl tert-Butyl Ether	ND	0.5	ug/L							
Methylene Chloride	ND	0.5	ug/L							
Naphthalene	ND	0.5	ug/L							
Tertiary-amyl methyl ether	ND	1.0	ug/L							
Tertiary-butyl Alcohol	ND	25.0	ug/L							
Tetrachloroethene	ND	0.5	ug/L							
Toluene	ND	0.5	ug/L							
Trichloroethene	ND	0.5	ug/L							
Vinyl Chloride	ND	0.2	ug/L							
Xylene O	ND	0.5	ug/L							
Xylene P,M	ND	0.5	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*4.27*		ug/L	*5.000*		*85*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.58*		ug/L	*5.000*		*92*	*80-120*			
LCS										
1,1,1-Trichloroethane	9.7	0.5	ug/L	10.00		97	70-130			
1,1,2-Trichloroethane	9.2	0.5	ug/L	10.00		92	70-130			
1,1-Dichloroethane	9.7	0.5	ug/L	10.00		97	70-130			
1,1-Dichloroethene	10.3	0.5	ug/L	10.00		103	70-130			
1,2-Dichlorobenzene	9.4	0.5	ug/L	10.00		94	70-130			
1,2-Dichloroethane	9.4	0.5	ug/L	10.00		94	70-130			
1,3-Dichlorobenzene	9.4	0.5	ug/L	10.00		94	70-130			
1,4-Dichlorobenzene	9.7	0.5	ug/L	10.00		97	70-130			
Acetone	52.0	5.0	ug/L	50.00		104	70-130			
Benzene	9.5	0.5	ug/L	10.00		95	70-130			
Carbon Tetrachloride	9.7	0.3	ug/L	10.00		97	70-130			
cis-1,2-Dichloroethene	9.7	0.5	ug/L	10.00		97	70-130			
Ethylbenzene	9.5	0.5	ug/L	10.00		95	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
524.2 Volatile Organic Compounds										
Batch DC21428 - 524.2										
Methyl tert-Butyl Ether	9.9	0.5	ug/L	10.00		99	70-130			
Methylene Chloride	9.1	0.5	ug/L	10.00		91	70-130			
Naphthalene	8.7	0.5	ug/L	10.00		87	70-130			
Tertiary-amyl methyl ether	9.6	1.0	ug/L	10.00		96	70-130			
Tertiary-butyl Alcohol	53.9	25.0	ug/L	50.00		108	70-130			
Tetrachloroethene	9.7	0.5	ug/L	10.00		97	70-130			
Toluene	9.6	0.5	ug/L	10.00		96	70-130			
Trichloroethene	9.3	0.5	ug/L	10.00		93	70-130			
Vinyl Chloride	11.7	0.2	ug/L	10.00		117	70-130			
Xylene O	9.9	0.5	ug/L	10.00		99	70-130			
Xylene P,M	19.5	0.5	ug/L	20.00		97	70-130			
Surrogate: 1,2-Dichlorobenzene-d4	*4.95*		ug/L	*5.000*		*99*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.94*		ug/L	*5.000*		*99*	*80-120*			
LCS Dup										
1,1,1-Trichloroethane	9.5	0.5	ug/L	10.00		95	70-130	3	20	
1,1,2-Trichloroethane	8.7	0.5	ug/L	10.00		87	70-130	5	20	
1,1-Dichloroethane	9.3	0.5	ug/L	10.00		93	70-130	4	20	
1,1-Dichloroethene	9.9	0.5	ug/L	10.00		99	70-130	4	20	
1,2-Dichlorobenzene	9.0	0.5	ug/L	10.00		90	70-130	4	20	
1,2-Dichloroethane	9.1	0.5	ug/L	10.00		91	70-130	2	20	
1,3-Dichlorobenzene	9.2	0.5	ug/L	10.00		92	70-130	2	20	
1,4-Dichlorobenzene	9.5	0.5	ug/L	10.00		95	70-130	1	20	
Acetone	51.5	5.0	ug/L	50.00		103	70-130	1	20	
Benzene	9.4	0.5	ug/L	10.00		94	70-130	0.4	20	
Carbon Tetrachloride	9.3	0.3	ug/L	10.00		93	70-130	4	20	
cis-1,2-Dichloroethene	9.4	0.5	ug/L	10.00		94	70-130	3	20	
Ethylbenzene	9.5	0.5	ug/L	10.00		95	70-130	0.4	20	
Methyl tert-Butyl Ether	9.7	0.5	ug/L	10.00		97	70-130	2	20	
Methylene Chloride	9.0	0.5	ug/L	10.00		90	70-130	2	20	
Naphthalene	9.0	0.5	ug/L	10.00		90	70-130	4	20	
Tertiary-amyl methyl ether	9.6	1.0	ug/L	10.00		96	70-130	0	20	
Tertiary-butyl Alcohol	51.4	25.0	ug/L	50.00		103	70-130	5	25	
Tetrachloroethene	9.7	0.5	ug/L	10.00		97	70-130	0.1	20	
Toluene	9.5	0.5	ug/L	10.00		95	70-130	1	20	
Trichloroethene	9.3	0.5	ug/L	10.00		93	70-130	0.4	20	
Vinyl Chloride	11.4	0.2	ug/L	10.00		114	70-130	3	20	
Xylene O	9.5	0.5	ug/L	10.00		95	70-130	4	20	
Xylene P,M	19.0	0.5	ug/L	20.00		95	70-130	3	20	
Surrogate: 1,2-Dichlorobenzene-d4	*4.90*		ug/L	*5.000*		*98*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*4.92*		ug/L	*5.000*		*98*	*80-120*			
608.3 Polychlorinated Biphenyls (PCB)										
Batch DC21007 - 3510C										
Blank										
Aroclor 1016	ND	0.05	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608.3 Polychlorinated Biphenyls (PCB)										
Batch DC21007 - 3510C										
Aroclor 1016 [2C]	ND	0.05	ug/L							
Aroclor 1221	ND	0.05	ug/L							
Aroclor 1221 [2C]	ND	0.05	ug/L							
Aroclor 1232	ND	0.05	ug/L							
Aroclor 1232 [2C]	ND	0.05	ug/L							
Aroclor 1242	ND	0.05	ug/L							
Aroclor 1242 [2C]	ND	0.05	ug/L							
Aroclor 1248	ND	0.05	ug/L							
Aroclor 1248 [2C]	ND	0.05	ug/L							
Aroclor 1254	ND	0.05	ug/L							
Aroclor 1254 [2C]	ND	0.05	ug/L							
Aroclor 1260	ND	0.05	ug/L							
Aroclor 1260 [2C]	ND	0.05	ug/L							
Aroclor 1262	ND	0.05	ug/L							
Aroclor 1262 [2C]	ND	0.05	ug/L							
Aroclor 1268	ND	0.05	ug/L							
Aroclor 1268 [2C]	ND	0.05	ug/L							
Surrogate: Decachlorobiphenyl	*0.0344*		ug/L	*0.05000*		*69*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0302*		ug/L	*0.05000*		*60*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0322*		ug/L	*0.05000*		*64*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0343*		ug/L	*0.05000*		*69*	*30-150*			
LCS										
Aroclor 1016	0.79	0.05	ug/L	1.000		79	50-140			
Aroclor 1016 [2C]	0.69	0.05	ug/L	1.000		69	50-140			
Aroclor 1260	0.91	0.05	ug/L	1.000		91	1-164			
Aroclor 1260 [2C]	0.75	0.05	ug/L	1.000		75	1-164			
Surrogate: Decachlorobiphenyl	*0.0387*		ug/L	*0.05000*		*77*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0340*		ug/L	*0.05000*		*68*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0329*		ug/L	*0.05000*		*66*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0312*		ug/L	*0.05000*		*62*	*30-150*			
LCS Dup										
Aroclor 1016	0.85	0.05	ug/L	1.000		85	50-140	7	36	
Aroclor 1016 [2C]	0.76	0.05	ug/L	1.000		76	50-140	10	36	
Aroclor 1260	0.99	0.05	ug/L	1.000		99	1-164	8	38	
Aroclor 1260 [2C]	0.82	0.05	ug/L	1.000		82	1-164	9	38	
Surrogate: Decachlorobiphenyl	*0.0396*		ug/L	*0.05000*		*79*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0349*		ug/L	*0.05000*		*70*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0343*		ug/L	*0.05000*		*69*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0335*		ug/L	*0.05000*		*67*	*30-150*			
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DC21103 - 3510C										

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DC21103 - 3510C										
Blank										
Acenaphthene	ND	0.20	ug/L							
Acenaphthylene	ND	0.20	ug/L							
Anthracene	ND	0.20	ug/L							
Benzo(a)anthracene	ND	0.05	ug/L							
Benzo(a)pyrene	ND	0.05	ug/L							
Benzo(b)fluoranthene	ND	0.05	ug/L							
Benzo(g,h,i)perylene	ND	0.20	ug/L							
Benzo(k)fluoranthene	ND	0.05	ug/L							
bis(2-Ethylhexyl)phthalate	0.44	2.50	ug/L							J
Butylbenzylphthalate	0.34	2.50	ug/L							J
Chrysene	ND	0.05	ug/L							
Dibenzo(a,h)Anthracene	ND	0.05	ug/L							
Diethylphthalate	ND	2.50	ug/L							
Dimethylphthalate	ND	2.50	ug/L							
Di-n-butylphthalate	ND	2.50	ug/L							
Di-n-octylphthalate	ND	2.50	ug/L							
Fluoranthene	ND	0.20	ug/L							
Fluorene	ND	0.20	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	0.05	ug/L							
Naphthalene	ND	0.20	ug/L							
Phenanthrene	ND	0.20	ug/L							
Pyrene	ND	0.20	ug/L							
Surrogate: 1,2-Dichlorobenzene-d4	*1.29*		ug/L	*3.125*		*41*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.32*		ug/L	*4.688*		*71*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.66*		ug/L	*3.125*		*53*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.16*		ug/L	*3.125*		*69*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.28*		ug/L	*3.125*		*73*	*30-130*			
LCS										
Acenaphthene	3.67	0.20	ug/L	4.000		92	40-140			
Acenaphthylene	3.53	0.20	ug/L	4.000		88	40-140			
Anthracene	3.64	0.20	ug/L	4.000		91	40-140			
Benzo(a)anthracene	3.61	0.05	ug/L	4.000		90	40-140			
Benzo(a)pyrene	3.96	0.05	ug/L	4.000		99	40-140			
Benzo(b)fluoranthene	4.78	0.05	ug/L	4.000		119	40-140			
Benzo(g,h,i)perylene	4.13	0.20	ug/L	4.000		103	40-140			
Benzo(k)fluoranthene	3.77	0.05	ug/L	4.000		94	40-140			
bis(2-Ethylhexyl)phthalate	5.02	2.50	ug/L	4.000		126	40-140			
Butylbenzylphthalate	5.81	2.50	ug/L	4.000		145	40-140			B+
Chrysene	3.84	0.05	ug/L	4.000		96	40-140			
Dibenzo(a,h)Anthracene	4.40	0.05	ug/L	4.000		110	40-140			
Diethylphthalate	4.67	2.50	ug/L	4.000		117	40-140			
Dimethylphthalate	4.15	2.50	ug/L	4.000		104	40-140			
Di-n-butylphthalate	4.87	2.50	ug/L	4.000		122	40-140			
Di-n-octylphthalate	4.63	2.50	ug/L	4.000		116	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
625.1(SIM) Semi-Volatile Organic Compounds										
Batch DC21103 - 3510C										
Fluoranthene	3.87	0.20	ug/L	4.000		97	40-140			
Fluorene	3.79	0.20	ug/L	4.000		95	40-140			
Indeno(1,2,3-cd)Pyrene	4.59	0.05	ug/L	4.000		115	40-140			
Naphthalene	2.65	0.20	ug/L	4.000		66	40-140			
Phenanthrene	3.63	0.20	ug/L	4.000		91	40-140			
Pyrene	4.02	0.20	ug/L	4.000		100	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*1.41*		ug/L	*3.125*		*45*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.73*		ug/L	*4.688*		*80*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.80*		ug/L	*3.125*		*58*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.17*		ug/L	*3.125*		*69*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.44*		ug/L	*3.125*		*78*	*30-130*			
LCS Dup										
Acenaphthene	3.85	0.20	ug/L	4.000		96	40-140	5	20	
Acenaphthylene	3.70	0.20	ug/L	4.000		92	40-140	4	20	
Anthracene	3.77	0.20	ug/L	4.000		94	40-140	3	20	
Benzo(a)anthracene	3.72	0.05	ug/L	4.000		93	40-140	3	20	
Benzo(a)pyrene	4.05	0.05	ug/L	4.000		101	40-140	2	20	
Benzo(b)fluoranthene	4.73	0.05	ug/L	4.000		118	40-140	1	20	
Benzo(g,h,i)perylene	4.30	0.20	ug/L	4.000		108	40-140	4	20	
Benzo(k)fluoranthene	3.99	0.05	ug/L	4.000		100	40-140	6	20	
bis(2-Ethylhexyl)phthalate	5.10	2.50	ug/L	4.000		128	40-140	2	20	
Butylbenzylphthalate	6.19	2.50	ug/L	4.000		155	40-140	6	20	B+
Chrysene	3.94	0.05	ug/L	4.000		99	40-140	3	20	
Dibenzo(a,h)Anthracene	4.54	0.05	ug/L	4.000		113	40-140	3	20	
Diethylphthalate	4.82	2.50	ug/L	4.000		121	40-140	3	20	
Dimethylphthalate	4.27	2.50	ug/L	4.000		107	40-140	3	20	
Di-n-butylphthalate	5.08	2.50	ug/L	4.000		127	40-140	4	20	
Di-n-octylphthalate	4.77	2.50	ug/L	4.000		119	40-140	3	20	
Fluoranthene	3.95	0.20	ug/L	4.000		99	40-140	2	20	
Fluorene	3.97	0.20	ug/L	4.000		99	40-140	5	20	
Indeno(1,2,3-cd)Pyrene	4.64	0.05	ug/L	4.000		116	40-140	1	20	
Naphthalene	2.96	0.20	ug/L	4.000		74	40-140	11	20	
Phenanthrene	3.73	0.20	ug/L	4.000		93	40-140	3	20	
Pyrene	4.12	0.20	ug/L	4.000		103	40-140	2	20	
Surrogate: 1,2-Dichlorobenzene-d4	*1.36*		ug/L	*3.125*		*44*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.55*		ug/L	*4.688*		*76*	*15-110*			
Surrogate: 2-Fluorobiphenyl	*1.73*		ug/L	*3.125*		*55*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.13*		ug/L	*3.125*		*68*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.43*		ug/L	*3.125*		*78*	*30-130*			
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch DC21041 - 3535A										
Blank										
1,4-Dioxane	ND	0.250	ug/L							
Surrogate: 1,4-Dioxane-d8	*ND*		ug/L	*5.000*		*37*	*15-115*			

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D(SIM) Semi-Volatile Organic Compounds w/ Isotope Dilution										
Batch DC21041 - 3535A										
LCS										
1,4-Dioxane	8.76	0.250	ug/L	10.00		88	40-140			
Surrogate: 1,4-Dioxane-d8	*2.04*		ug/L	*5.000*		*41*	*15-115*			
LCS Dup										
1,4-Dioxane	9.90	0.250	ug/L	10.00		99	40-140	12	20	
Surrogate: 1,4-Dioxane-d8	*1.61*		ug/L	*5.000*		*32*	*15-115*			
Classical Chemistry										
Batch DC21136 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	497	10.0	ug/L	499.8		99	90-110			
LCS Dup										
Hexavalent Chromium	498	10.0	ug/L	499.8		100	90-110	0.1	20	
Batch DC21148 - General Preparation										
Blank										
Total Residual Chlorine	ND	20.0	ug/L							
LCS										
Total Residual Chlorine	2.50		mg/L	2.540		98	85-115			
Batch DC21413 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5.0	mg/L							
LCS										
Total Petroleum Hydrocarbon	14	5.0	mg/L	19.38		72	66-114			
Batch DC21421 - TCN Prep										
Blank										
Total Cyanide	ND	5.00	ug/L							
LCS										
Total Cyanide	20.3	5.00	ug/L	20.06		101	90-110			
LCS										
Total Cyanide	148	5.00	ug/L	150.4		98	90-110			
LCS Dup										
Total Cyanide	148	5.00	ug/L	150.4		99	90-110	0.3	20	
Batch DC21423 - General Preparation										
Blank										
Chloride	ND	500	ug/L							
LCS										
Chloride	9		mg/L	10.00		92	90-110			
Batch DC21441 - General Preparation										

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DC21441 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	62		mg/L	64.00		97	80-120			
Batch DC21451 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.96	0.10	mg/L	0.9994		96	80-120			
Batch DC21543 - General Preparation										
Blank										
Phenols	ND	50	ug/L							
LCS										
Phenols	957	50	ug/L	1000		96	80-120			
504.1 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane										
Batch DC21511 - 504/8011										
Blank										
1,2-Dibromo-3-Chloropropane	ND	0.015	ug/L							
1,2-Dibromo-3-Chloropropane [2C]	ND	0.015	ug/L							
1,2-Dibromoethane	ND	0.015	ug/L							
1,2-Dibromoethane [2C]	ND	0.015	ug/L							
Surrogate: Pentachloroethane	*0.0725*		ug/L	*0.08000*		*91*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0687*		ug/L	*0.08000*		*86*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.045	0.015	ug/L	0.04000		112	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.042	0.015	ug/L	0.04000		104	70-130			
1,2-Dibromoethane	0.039	0.015	ug/L	0.04000		97	70-130			
1,2-Dibromoethane [2C]	0.041	0.015	ug/L	0.04000		101	70-130			
Surrogate: Pentachloroethane	*0.0791*		ug/L	*0.08000*		*99*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0734*		ug/L	*0.08000*		*92*	*30-150*			
LCS										
1,2-Dibromo-3-Chloropropane	0.091	0.015	ug/L	0.08000		114	70-130			
1,2-Dibromo-3-Chloropropane [2C]	0.085	0.015	ug/L	0.08000		106	70-130			
1,2-Dibromoethane	0.080	0.015	ug/L	0.08000		101	70-130			
1,2-Dibromoethane [2C]	0.086	0.015	ug/L	0.08000		108	70-130			
Surrogate: Pentachloroethane	*0.0744*		ug/L	*0.08000*		*93*	*30-150*			
Surrogate: Pentachloroethane [2C]	*0.0673*		ug/L	*0.08000*		*84*	*30-150*			
Alcohol Scan by GC/FID										

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Alcohol Scan by GC/FID										
Batch DC21601 - No Prep										
Blank										
Ethanol	ND	10	mg/L							
LCS										
Ethanol	727	10	mg/L	1000		73	60-140			
LCS Dup										
Ethanol	760	10	mg/L	1000		76	60-140	4	30	

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam ESS Laboratory Work Order: 22C0404

Notes and Definitions

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

CERTIFICATE OF ANALYSIS

Client Name: Lockwood Remediation Technologies LLC
Client Project ID: Winchester Dam

ESS Laboratory Work Order: 22C0404

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

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

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

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

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

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

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

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

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

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Lockwood Remediation Tech - AAK

Shipped/Delivered Via: ESS Courier

ESS Project ID: 22C0404
Date Received: 3/11/2022
Project Due Date: 3/16/2022
Days for Project: 3 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 0.1 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

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

Sample Receiving Notes:

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

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	265832	Yes	N/A	Yes	1L Amber	NP	
1	265833	Yes	N/A	Yes	1L Amber	NP	
1	265834	Yes	N/A	Yes	1L Amber	NP	
1	265835	Yes	N/A	Yes	1L Amber	NP	
1	265836	Yes	N/A	Yes	1L Amber	NP	
1	265837	Yes	N/A	Yes	1L Amber	H2SO4	
1	265843	Yes	N/A	Yes	1L Amber	H2SO4	
1	265844	Yes	N/A	Yes	250 mL Poly	NP	
1	265845	Yes	N/A	Yes	250 mL Poly	NP	
1	265846	Yes	N/A	Yes	250 mL Poly	NP	
1	265847	Yes	N/A	Yes	250 mL Poly	NP	
1	265848	Yes	N/A	Yes	250 mL Poly	HNO3	
1	265849	Yes	N/A	Yes	250 mL Poly	HNO3	
1	265850	Yes	N/A	Yes	250 mL Poly	H2SO4	
1	265851	Yes	N/A	Yes	250 mL Poly	NaOH pH>12	
1	265852	Yes	N/A	Yes	250 mL Poly		

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Lockwood Remediation Tech - AAK

ESS Project ID: 22C0404
Date Received: 3/11/2022

1	265862	Yes	No	Yes	VOA Vial	HCl
1	265863	Yes	No	Yes	VOA Vial	HCl
1	265864	Yes	No	Yes	VOA Vial	HCl
1	265865	Yes	No	Yes	VOA Vial	HCl
1	265866	Yes	No	Yes	VOA Vial	HCl
1	265867	Yes	No	Yes	VOA Vial	HCl
1	265868	Yes	N/A	Yes	VOA Vial	NP
1	265876	Yes	N/A	Yes	1L Poly	NP
2	265853	Yes	N/A	Yes	250 mL Poly	HNO3
2	265854	Yes	N/A	Yes	250 mL Poly	HNO3
2	265855	Yes	N/A	Yes	250 mL Poly	NP
2	265856	Yes	N/A	Yes	250 mL Poly	H2SO4

2nd Review

Initials KL

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

Completed By: [signature] Date & Time: 3-11-22 1509

Reviewed By: [signature] Date & Time: 3/11/22 1522

ESS Laboratory

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

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 22C0404

Turn Time: 3-Day Standard Rush_____ Approved By: _____

Reporting Limits - **Group 1 PAHs < 0.1 ug/L**

State where samples were collected: MA NH

Discharge into: Fresh Water Salt Water X

Is this project for: **RGP**

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

Project Manager: **John Henry**
Company: **Lockwood Remediation Technologies, LLC**
Address: **89 Crawford Street, Leominster, MA 01453**
E-Mail: **jhenry@lrt-llc.net clombardo@lrt-llc.net**

Project # **2-2371**
Project Name: **Winchester Dam**
PO # **2-2371**

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Containers	RGP Metals Total	RGP Metals Dissolved Lab filtered	Hardness (Calculation)	Ethanol ASTM D3695	Chloride 300.0*	Total Cyanide 4500 LL	TPH 1664	TSS 2540D*	TRC 4500-CL D*	Ammonia 350.1	Tri Cr (Calc. MUST run T. Cr)	Hex Cr 3500	Phenol 420.1	RGP VOC Long List 524	1,4-Dioxane 8270-SIM	EDB 504.1	RGP SVOC Long List 625-SIM	PCB 608	Comment #
					Analysis																				
1	3/11	8:20	G	GW	MW-401	22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1,2
2	3/11	8:15	G	GW	Recieveing Water (Freshwater)	4	X		X							X		X							1,2
							4	1	4	1	1	5	3	1	1	3	-	1	3	2	1	2	1	1	
							P	P	P	V	P	P	AG	P	P	P	-	P	AG	V	AG	V	AG	AG	

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

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

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

Cooler Present ✓Yes ___No
Seals Intact ___Yes ___No NA: ___
Cooler Temperature: 0.1

Sampled by : Carl Lombardo

Comments: 1) RGP Metals include Sb, As, Cd, Cr, Cu, Fe, Pb, Ni, Se, Ag and Zn by 200.7/3113B and Hg by 245.1
2) Parameters in **BOLD** have Short hold-time
3) Diethylhexyl Phthalate = [Bis(2-ethylhexyl) Phthalate] DL < 2.2 ug/L - phthalates also show MDL
4) **Dissolved Metals to be Lab filtered** **pH (Field):**

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	3/11	3/11/22 13:00		1435	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

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

Appendix C

Cutsheets and SDSs

GROOVED & SMOOTH-END FLOWMETER MODEL MG/MS100

SPECIFICATIONS

PERFORMANCE

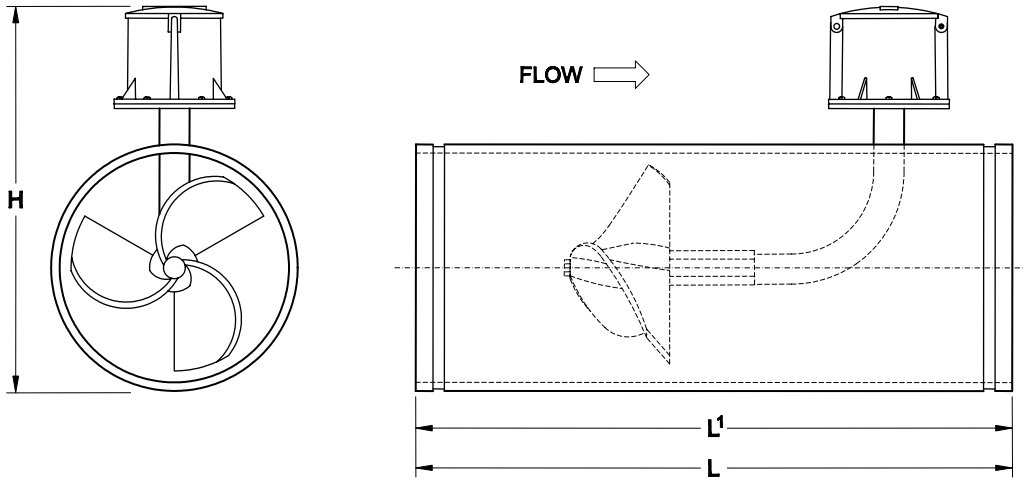
ACCURACY/REPEATABILITY: ±2% of reading guaranteed throughout full range. ±1% over reduced range. Repeatability 0.25% or better.
RANGE: (see dimensions chart below)
HEAD LOSS: (see dimensions chart below)
MAXIMUM TEMPERATURE: (Standard Construction) 160°F constant
PRESSURE RATING: 150 psi

MATERIALS

TUBE: Epoxy-coated carbon steel.
BEARING ASSEMBLY: Impeller shaft is 316 stainless steel. Ball bearings are 440C stainless steel.
MAGNETS: (Permanent type) Cast or sintered alnico
BEARING HOUSING: Brass; Stainless Steel optional
IMPELLER: Impellers are manufactured of high-impact plastic, retaining their shape and accuracy over the life of the meter. High temperature impeller is optional.
REGISTER: An instantaneous flowrate indicator and six-digit straight-reading totalizer are standard. The register is hermetically sealed within a die cast aluminum case. This protective housing includes a domed acrylic lens and hinged lens cover with locking hasp.
COATING: Fusion-bonded epoxy

OPTIONS

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



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

MG100 / MS100	DIMENSIONS												
Meter Size (inches)	**2**	**2 ½**	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**
Maximum Flow U.S. GPM	250	250	250	600	1200	1500	1800	2500	3000	4000	5000	6000	8500
Minimum Flow U.S. GPM	40	40	40	50	90	100	125	150	250	275	400	475	700
Head Loss in Inches at Max. Flow	29.50	29.50	29.50	23.00	17.00	6.75	3.75	2.75	2.00	1.75	1.50	1.25	1.00
Shipping Weight, lbs.	* See Special Note		17	40	54	68	87	106	140	144	172	181	223
H (inches)			10.9	12.78	13.84	14.84	16.91	18.90	20.53	22.53	25.53	26.53	30.53
L (inches) MG100			13	20	20	20	20	20	20	22	22	22	22
L^1 (inches) MS100			13	20	22	22	22	22	22	24	24	24	24
O.D. of Meter Tube			3.50	4.500	6.625	8.625	10.750	12.750	14.00	16.00	18.00	20.00	24.00

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

Larger flowmeters on special order.

Basic Pedestal

Standard Centrifugal Pump

Model VGH5B31-B

Size 6” x 5”

PUMP SPECIFICATIONS

Size: 6” x 5” (152 mm x 127 mm) Raised Face Flanges.

Casing: Ductile Iron.
Maximum Operating Pressure 110 psi (662 kPa).*

Enclosed Type, Six Vane Impeller: Gray Iron 40.
Handles 7/8” (23 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.

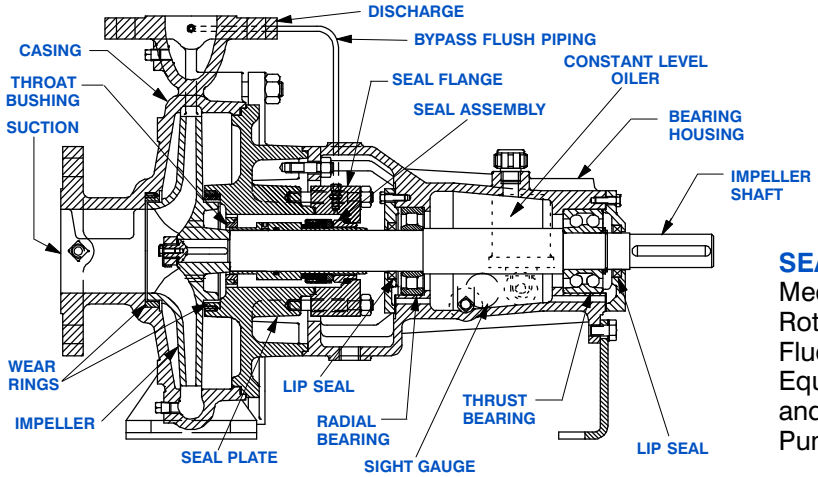
Gaskets: Nitrile Rubber.

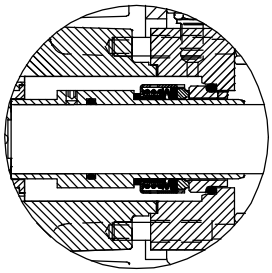
Hardware: Standard Plated Steel.

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).*

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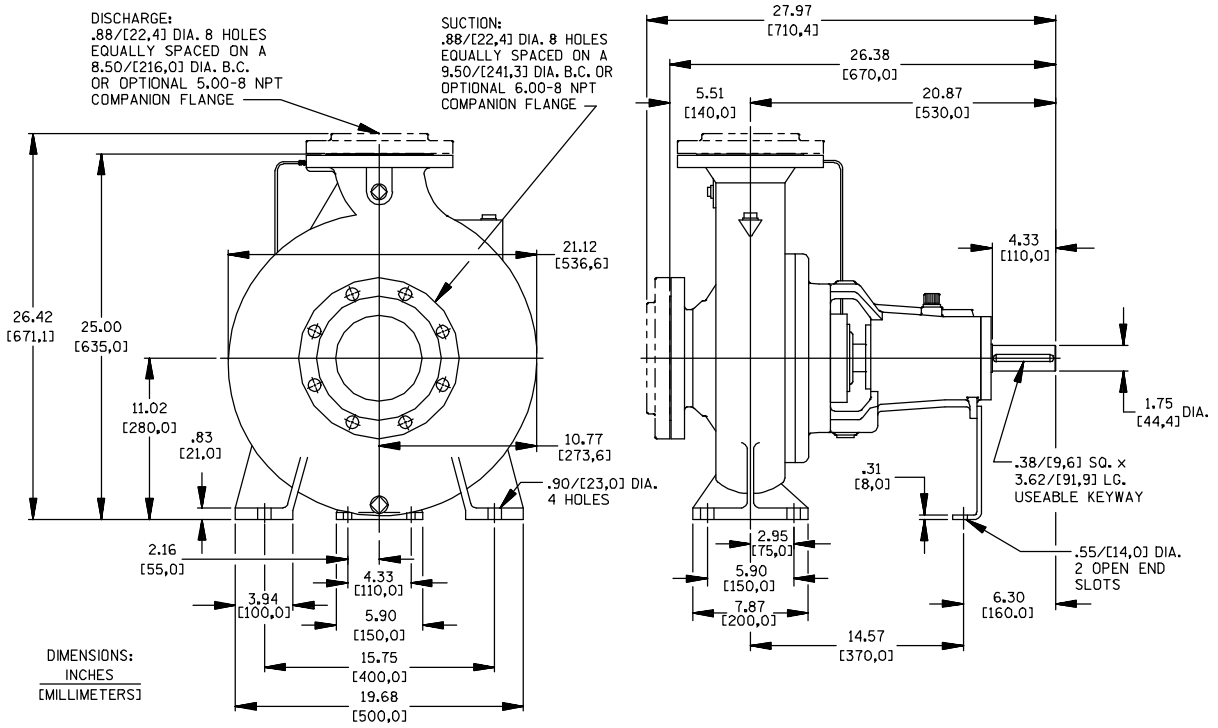
Specification Data

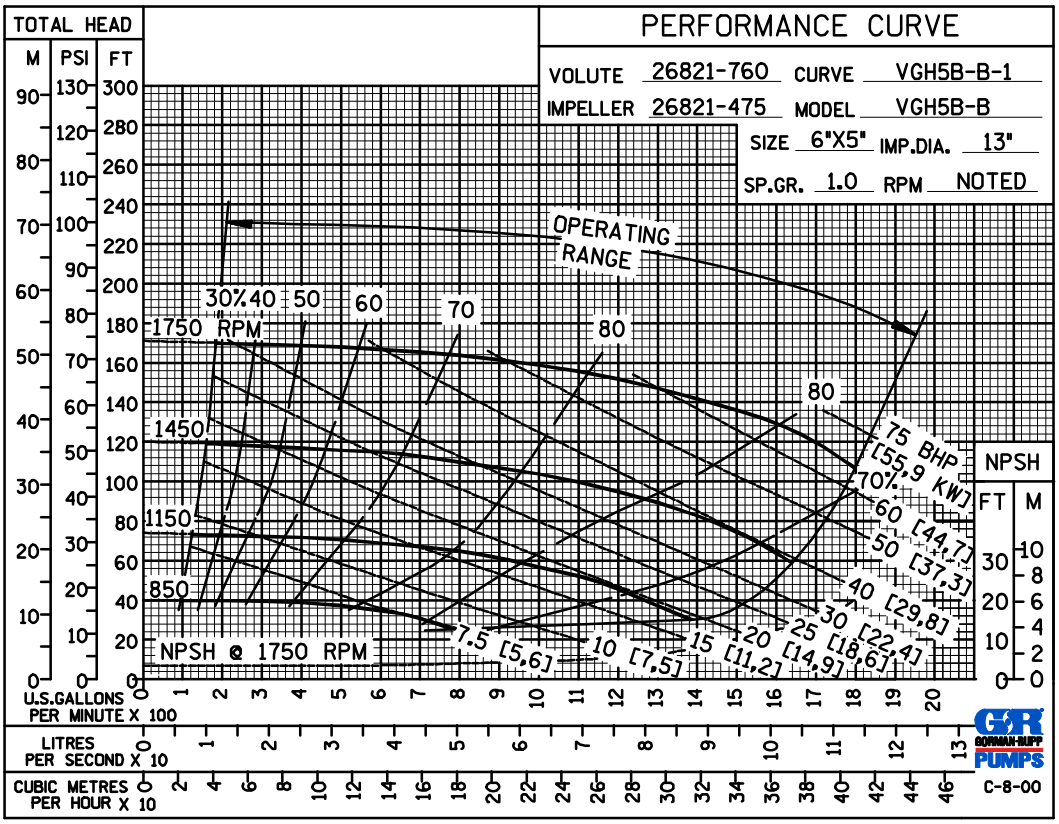
SECTION 70, PAGE 976

APPROXIMATE
DIMENSIONS and WEIGHTS

NET WEIGHT: 366 LBS. (166 KG.)
SHIPPING WEIGHT: 386 LBS. (175 KG.)
EXPORT CRATE: 17 CU. FT. (0,5 CU. M.)



PERFORMANCE BASED ON WATER



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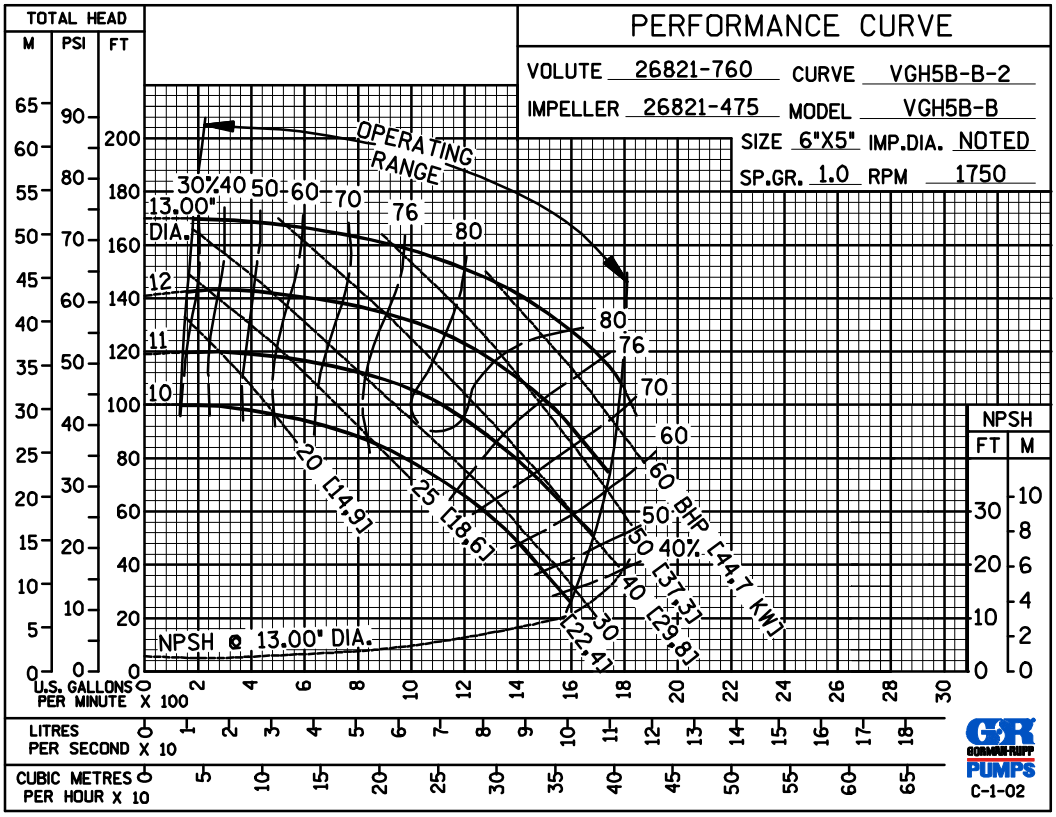
PERFORMANCE BASED ON WATER



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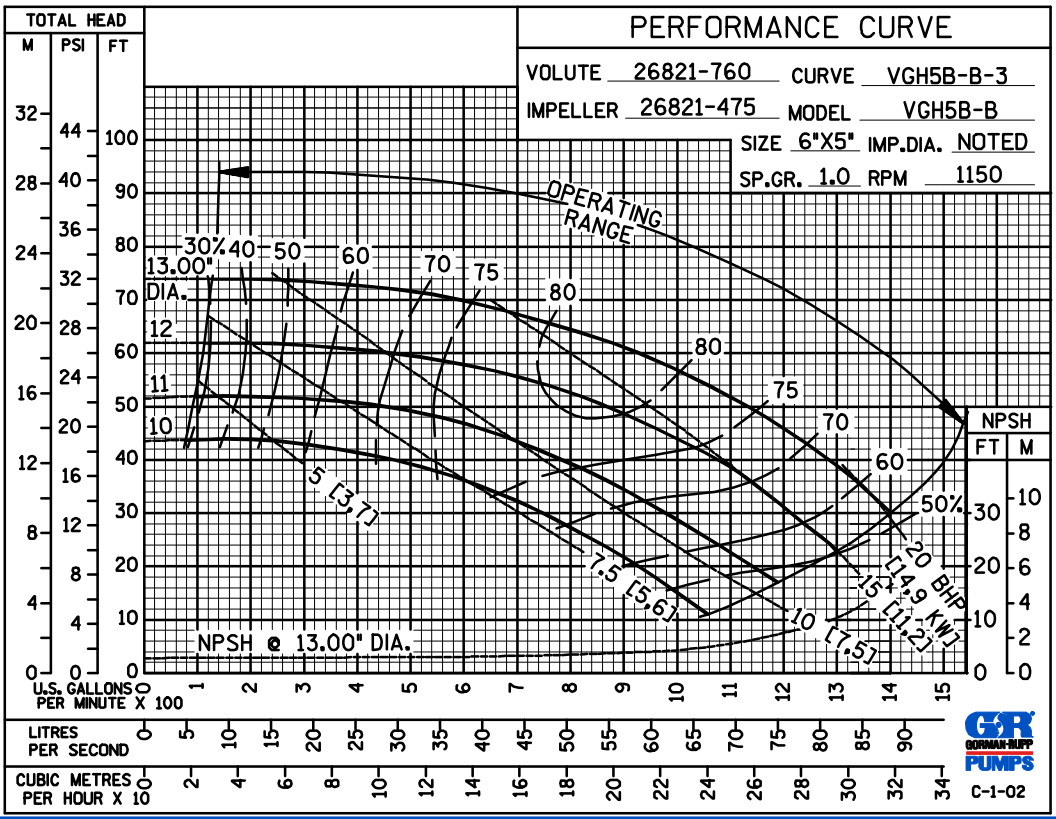

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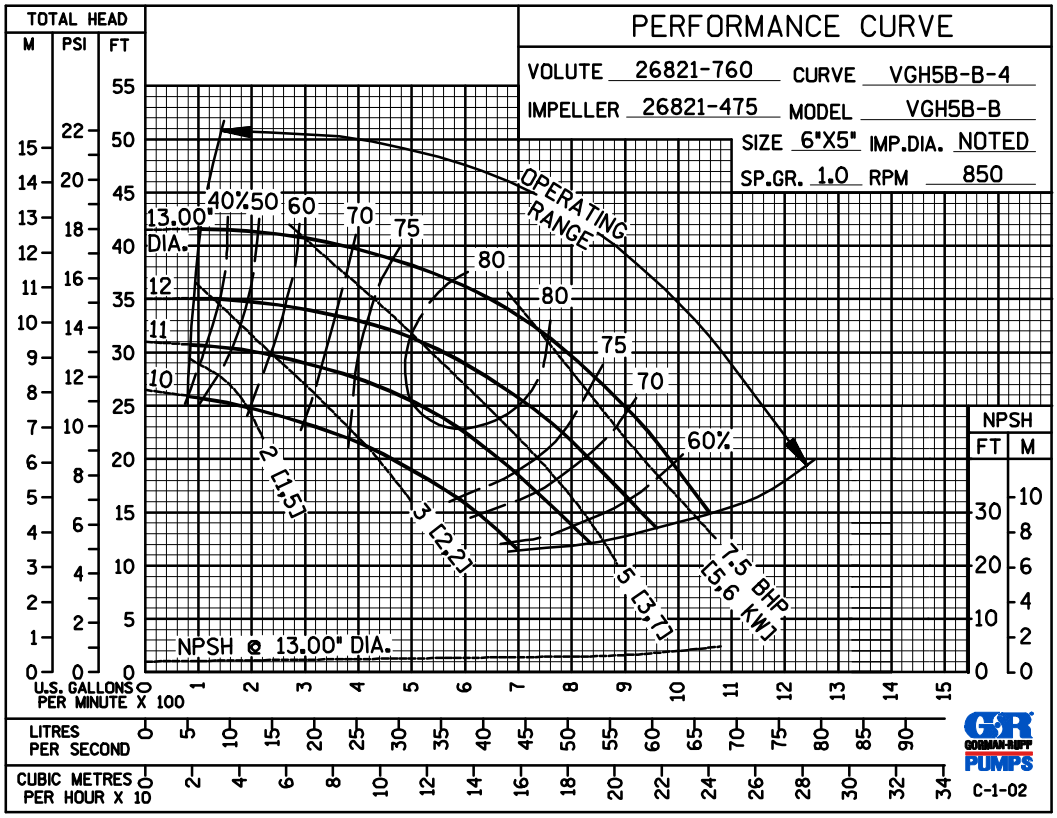
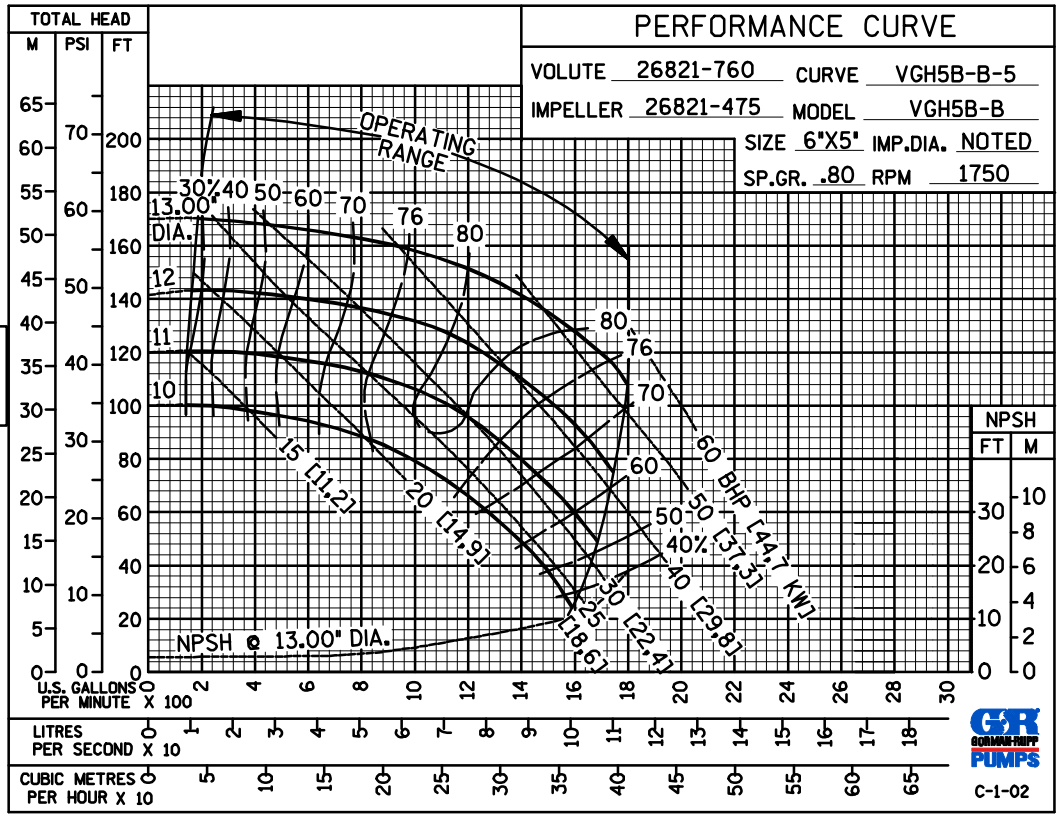
PERFORMANCE BASED ON WATER



PERFORMANCE BASED ON PETROLEUM



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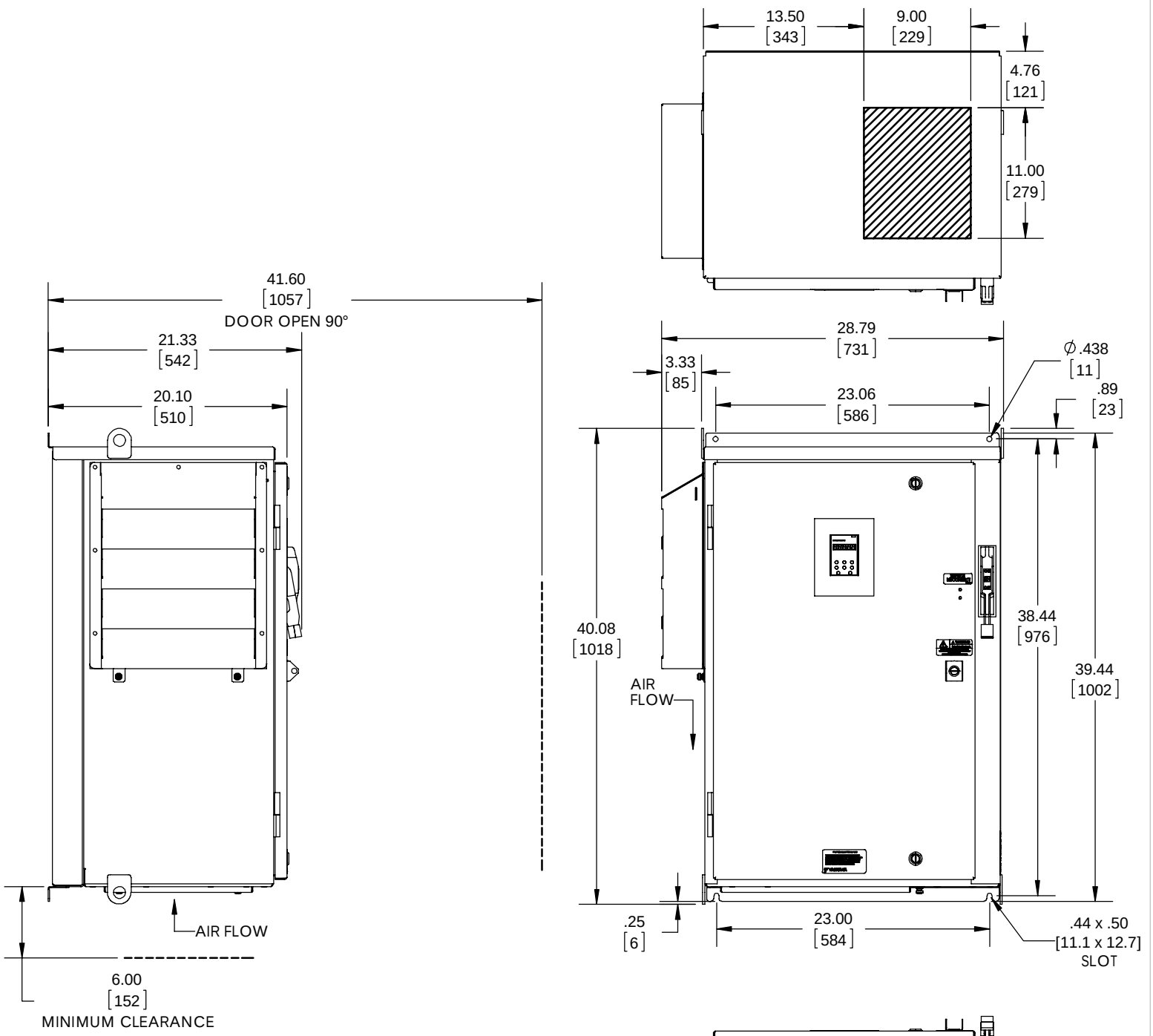

NOTES:
A. FOR REFERENCE ONLY UNLESS PROPERLY ENDORSED. FOR ADDITIONAL DETAILS AND SPECIFICATIONS, CONSULT FACTORY.
B. DIMENSIONS ARE IN INCHES [MILLIMETERS].
C. HATCHED AREA INDICATES PERMISSIBLE CONDUIT ENTRANCE AREA.
D. FANS, FILTERS, LEG STANDS OR CLOSING PLATES ARE SUPPLIED WHEN OPTION MIX NECESSITATES.
E. USE APPROPRIATE TYPE RATED HUBS OR FITTINGS TO MAINTAIN ENCLOSURE RATING.

REVISIONS				
REV.	DESCRIPTION	DRAWN BY	ECO	DATE
02	ADDED NEW 12" AND 30" LEG STANDS	JDE	4526	9/11/13
01	ADDED NEW 12" AND 30" LEG STANDS	JDE	4462	8/16/13
00	INITIAL RELEASE	JDE	-	4/25/13

YAS A A ™

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DR WN: DE	D TE 04/2 /13	TIT E: DIMENSI N DR WING, 1000 T PE 3R, W3	
CHEC ED: R M	D TE 04/2 /13	M TERI	
TECH:	D TE	SI E	RE ISI N 02 / P GE 1 2
PPR ED: B	D TE 0 /02/13	DR WING : DD. 1.3R.W3.01	
RIGIN DESIGN: DE	D TE 04/19/13		

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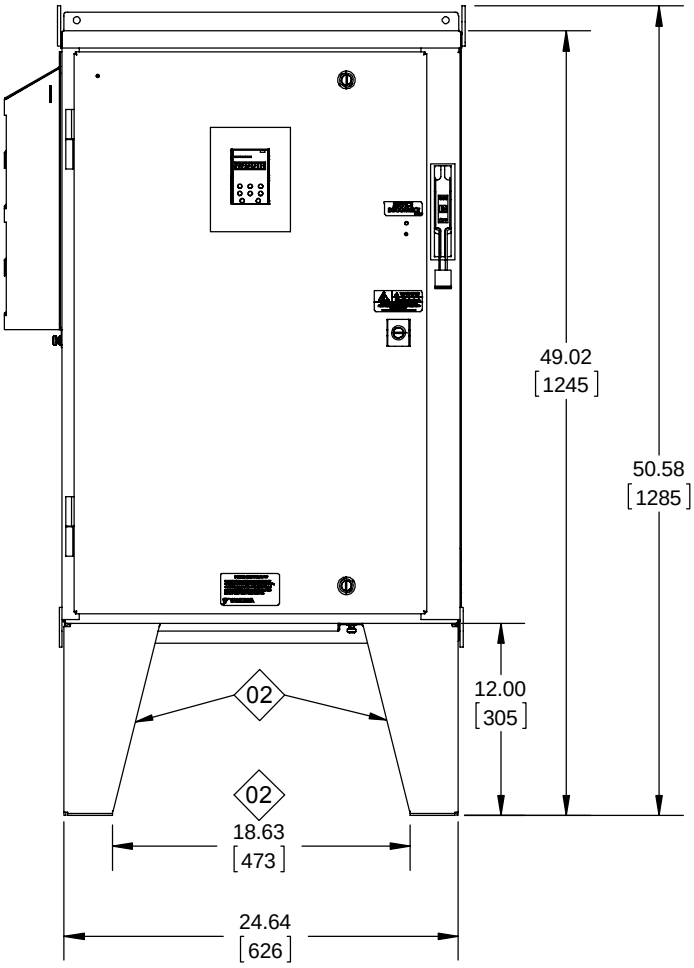
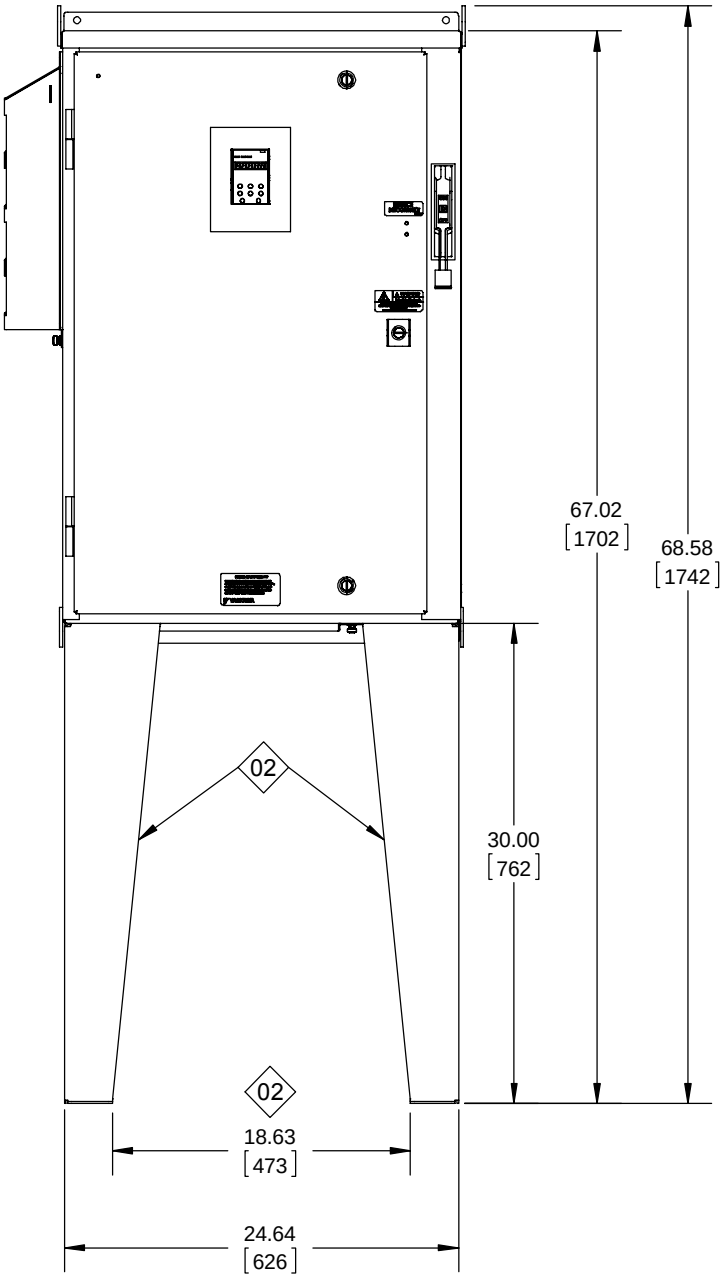
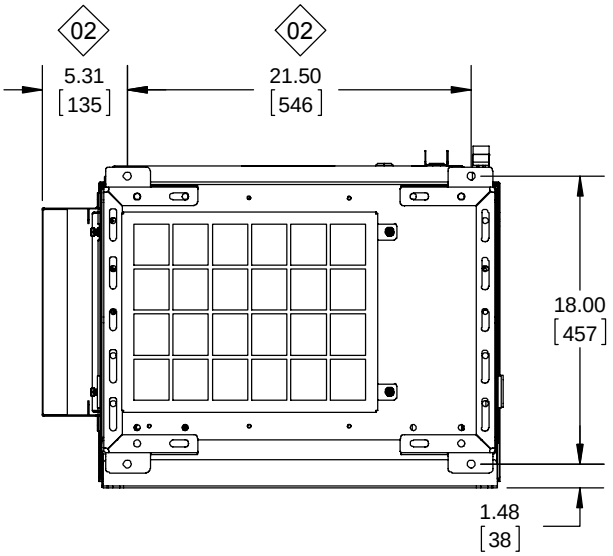
LEG STAND MOUNTING OPTION DIMENSIONS



12.0" HIGH LEGS



30.0" HIGH LEGS



NOTE: DRILL PATTERN SAME
FOR 12" AND 30" HIGH LEGS

YASKAWA™	DR WN: DE	D TE 04/2 /13	TIT E: DIMENSI N DR WING, 1000 T PE 3R, W3
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	TECH:	D TE	SI E / RE ISI N 02 / P GE 2 2
	PPR ED: B	D TE 0 /02/13	DR WING : DD. 1.3R.W3.01
	RIGIN DESIGN: DE	D TE 04/19/13	

Pre ared by umeil edwards 9/18/2013 8:23:13 M

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

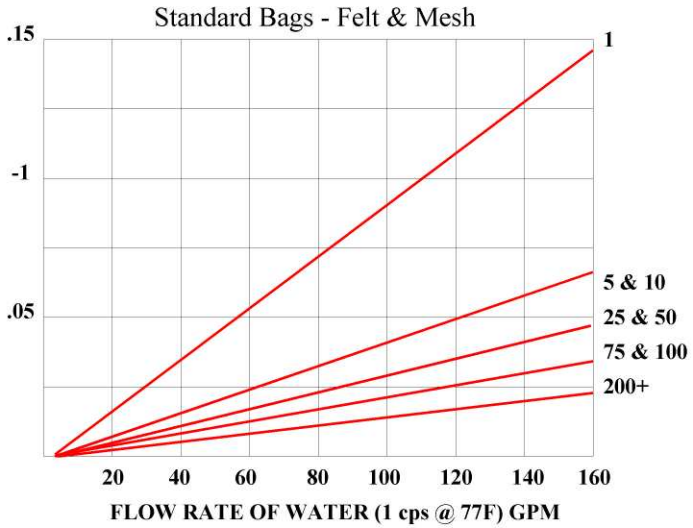
Optional Filter Media

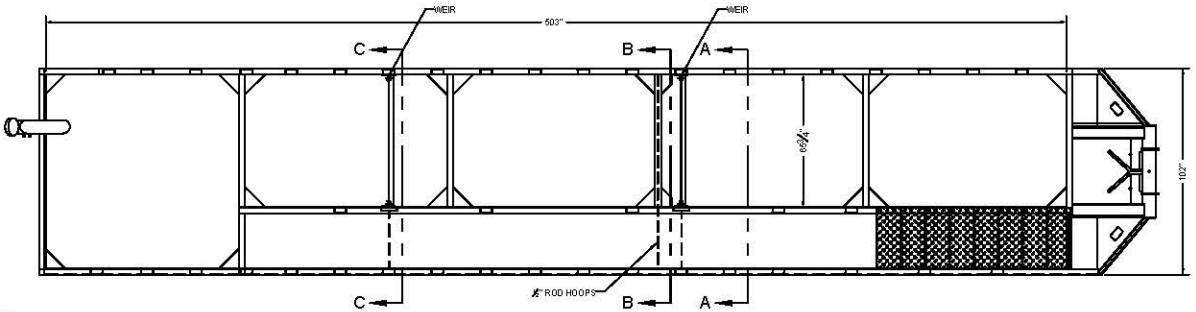
Felt: Nomex, Polyester, Polypropylene

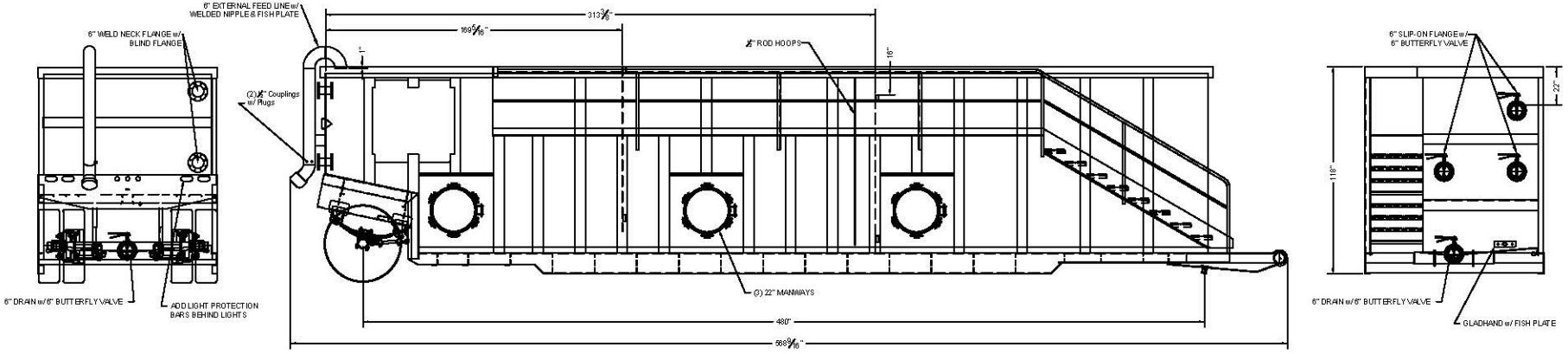
Monofilament: Nylon, Polyester, Polypropylene

Multifilament: Nylon, Polyester

Polypropylene: Oil Removal

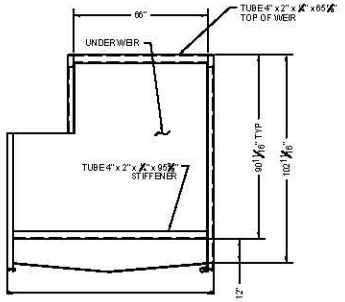




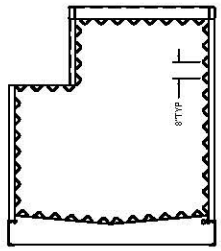


STANDARD SPECIFICATION

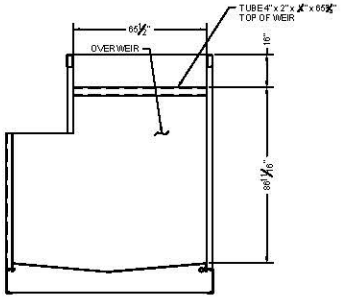
CAPACITY: .... 18,480 GALLONS (440 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE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



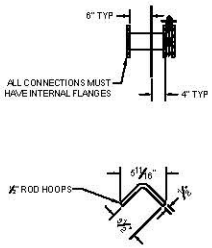
SECTION VIEW "C-C"



SECTION VIEW "B-B"



SECTION VIEW "A-A"

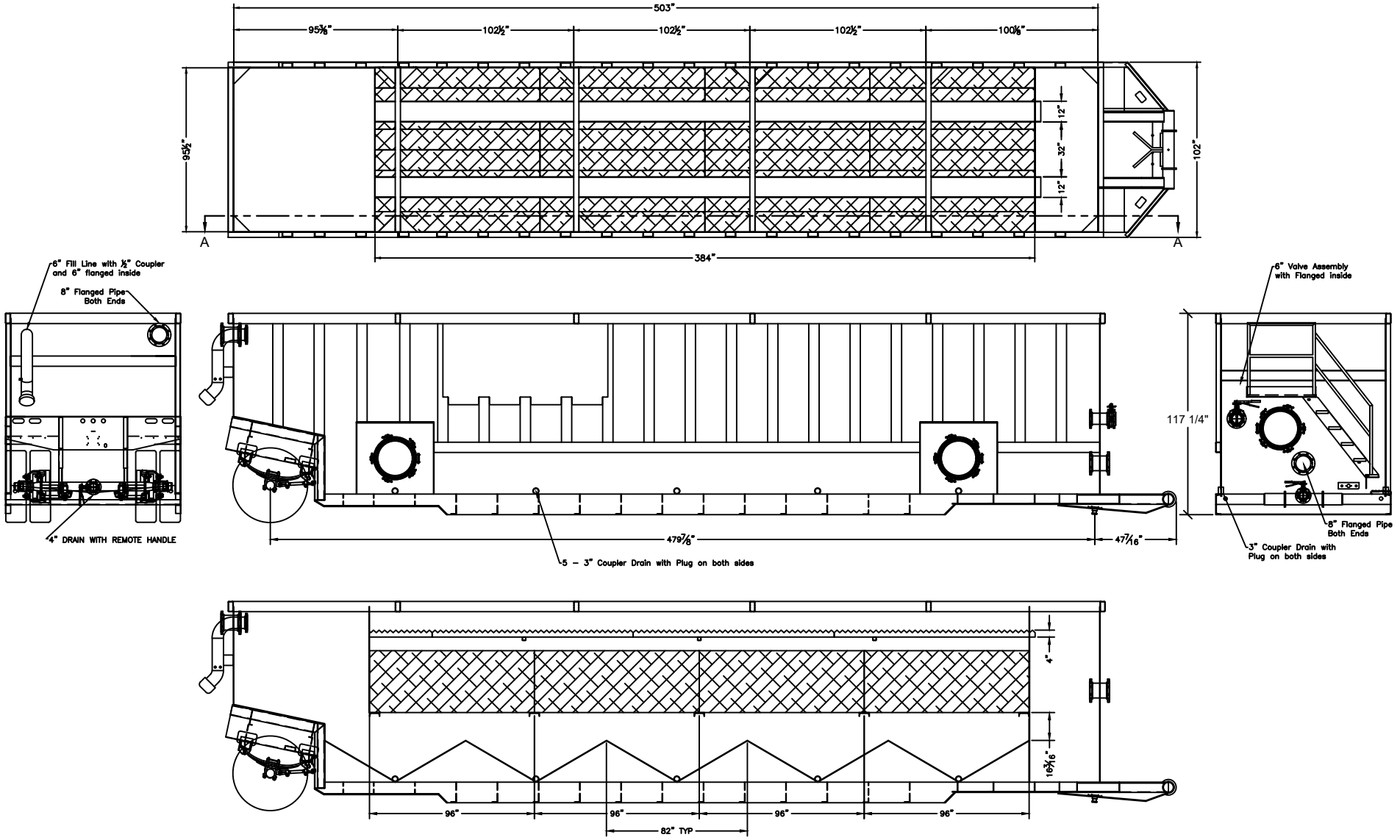


NOTE:
This drawing is a representation baseline for this model of tank. Variations between this drawing and the actual equipment do exist, primarily with appurtenance locations, sizes and quantities.

18,000 gal. Weir Tank

Lockwood Remediation Technologies, LLC

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



SECTION A-A

18,000 Gallon Clarifier

NOTES:
1. DO NOT SCALE PRINT.
2. DESTROY ALL PREVIOUS REVISIONS.
3. ALL DRAWING CHANGES ARE TO BE MADE ON CAD SYSTEM.

TOLERANCE UNLESS OTHERWISE NOTED.
X ±.060
.XX ±.030
.XXX ±.010
∠ ± 1°

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DESCRIPTION:

PLASMA / DXF FILE

MATERIAL: MATERIAL

FIRST USED:

ECN:

DRW: FK

DATE: 18-0709

SIZE: B

DRAWING NO.:

REV.: 2

SCALE: NTS

BOOK NO.:

REV	CHANGE	DATE	BY

REVISION

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

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

Features

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

Controls

Manual Stroke Rate

- Turn-Down Ratio 10:1

Manual Stroke Length

- Turn-Down Ratio 10:1

4-20mA or 20-4mA Input

- Automatic Control

Operating Benefits

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

Aftermarket

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

Series HV

Specifications and Model Selection

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

Engineering Data

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

Diaphragm: PTFE-faced CSPE-backed

Check Valves Materials Available:

Seats/O-Rings: PTFE, CSPE, Viton

Balls: Ceramic, PTFE, 316 SS, Alloy C

Fittings Materials Available: GFPPL, PVC, PVDF

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

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

Tubing: Clear PVC, White PE

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

Engineering Data

Reproducibility: +/- 2% at maximum capacity

Viscosity Max CPS: 20,000 CPS

Stroke Frequency Max SPM: 125

Stroke Frequency Turn-Down Ratio: 10:1

Stroke Length Turn-Down Ratio: 10:1

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

Average Current Draw:

@ 115 VAC; Amps: 1.0 Amps

@ 230 VAC; Amps: 0.5 Amps @ 230 VAC

Peak Input Power: 300 Watts

Average Input Power @ Max SPM: 130 Watts

Custom Engineered Designs – Pre-Engineered Systems

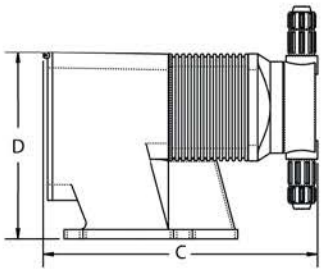
Pre-Engineered Systems

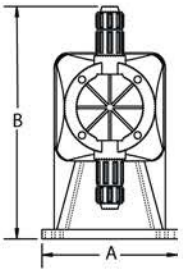
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key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

Dimensions

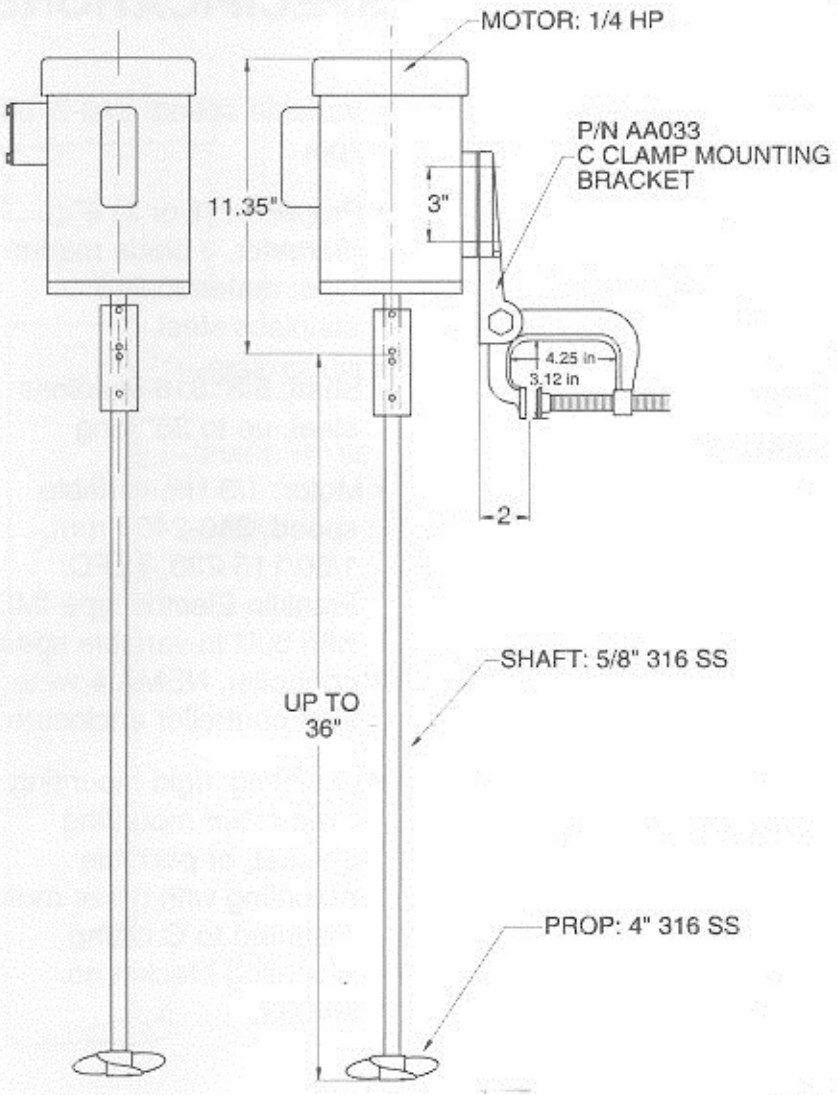
Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11	8.2	25

NOTE: Inches X 2.54 = cm





MIXER MODEL NO. AA102A



AA102A

SPECIFICATIONS

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

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

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

SECTION 2) HAZARDS IDENTIFICATION

Classification

Corrosive to metals - Category 1

Eye Irritation - Category 2

Skin Irritation - Category 2

Pictograms

Signal Word

Warning

Hazardous Statements - Health

Causes serious eye irritation

Causes skin irritation

Hazardous Statements - Physical

May be corrosive to metals

Precautionary Statements - General

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

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Keep only in original packaging.

Wash thoroughly after handling.

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

Precautionary Statements - Response

Absorb spillage to prevent material damage.

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

If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water.

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

If skin irritation occurs: Get medical advice/attention.

Take off contaminated clothing. And wash it before reuse.

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

No precautionary statement available.

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

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

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

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

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

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

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

Acute Toxicity

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

Aspiration Hazard

No Data Available

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

Causes serious eye irritation

Skin Corrosion/Irritation

Causes skin irritation

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Ecotoxicity

Acute aquatic toxicity - Product Information

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

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

Algae/aquatic plants
No information available

Acute aquatic toxicity - Component Information

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

Mobility in Soil

No data available.

Bio-accumulative Potential

No data available.

Persistence and Degradability

No data available.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

NOT REGULATED FOR TRANSPORTATION

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

SECTION 15) REGULATORY INFORMATION

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

SECTION 16) OTHER INFORMATION

Glossary

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

Additional Information

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

Version 1.0:

Revision Date: Apr 15,2019

First Edition.

DISCLAIMER

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

Revision date 2019-15-4

SAFETY DATA SHEET

Revision number 1

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

Product ID:	Redux-823
Product Name:	Processing aid for industrial applications
Revision Date:	Apr 15, 2019
Supersedes Date:	Jan 25, 2018
Manufacturer's Name:	Azure Water Services
Address:	280 Callegari Drive West Haven, CT, US, 06516
Emergency Phone:	Chemtrec 800-424-9300, in US and Canada only

SECTION 2) HAZARDS IDENTIFICATION

Classification of the substance or mixture

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

Hazards Not Otherwise Classified (HNOC)

None.

SECTION 3) COMPOSITION / INFORMATION ON INGREDIENTS

None of the chemicals in this product are hazardous according to the GHS.

SECTION 4) FIRST-AID MEASURES

Inhalation

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

Eye Contact

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

Skin Contact

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

Ingestion

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

Most Important Symptoms and Effects, Both acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

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

Specific Hazards in Case of Fire

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

Fire-Fighting Procedures

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

Special Protective Actions

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

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

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

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

Do not touch or walk through spilled material.

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

Recommended Equipment

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

Personal Precautions

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

Environmental Precautions

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

Methods and Materials for Containment and Cleaning Up

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

SECTION 7) HANDLING AND STORAGE

General

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

Ventilation Requirements

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

Storage Room Requirements

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

SECTION 8) EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection

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

Skin Protection

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

Respiratory Protection

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

Appropriate Engineering Controls

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

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	6.26 lb/gal
Specific Gravity	0.6 - 0.9
Appearance	granular, white solid
pH	5 - 9 @ 5 g/L
Odor Threshold	N/A
Odor Description	N/A
Water Solubility	Complete
Viscosity	N/A
Vapor Pressure	Similar to water
Vapor Density	N/A
Freezing Point	<32 °F
Boiling Point	>212 °F
Evaporation Rate	N/A
Flammability	Will not burn

SECTION 10) STABILITY AND REACTIVITY

Stability

Stable under normal storage and handling conditions.

Conditions To Avoid

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

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong bases, acids, oxidizing and reducing agents.

Hazardous Decomposition Products

May produce carbon monoxide, carbon dioxide.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

No Data Available

Acute Toxicity

Inhalation, Testing: Not expected to be toxic by inhalation.
Ingestion, Testing: LD50, Rat > 5,00 mg/kg
Dermal, Testing: LD50, Rat > 5,000 mg/kg

Respiratory/Skin Sensitization

No Data Available

Serious Eye Damage/Irritation

No Data Available

Skin Corrosion/Irritation

No Data Available

Specific Target Organ Toxicity - Repeated Exposure

No Data Available

Specific Target Organ Toxicity - Single Exposure

No Data Available

SECTION 12) ECOLOGICAL INFORMATION

Acute Ecotoxicity

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

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

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

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

Mobility in Soil

No data available.

Bio-accumulative Potential

Not bioaccumulating.

Persistence and Degradability

Not readily biodegradable.

Other Adverse Effect

No data available.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

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

SECTION 14) TRANSPORT INFORMATION

U.S. DOT Information

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

DOT Shipping Designation:

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

SECTION 15) REGULATORY INFORMATION

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

SECTION 16) OTHER INFORMATION

Glossary

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

Additional Information

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

Version 1.0:

Revision Date: Jan 25, 2018
First Edition.

DISCLAIMER

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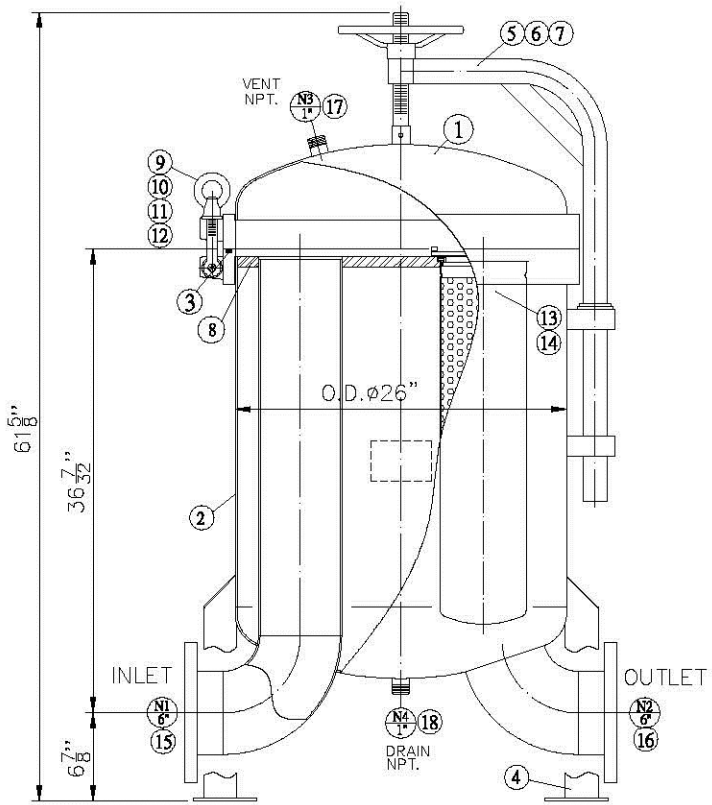
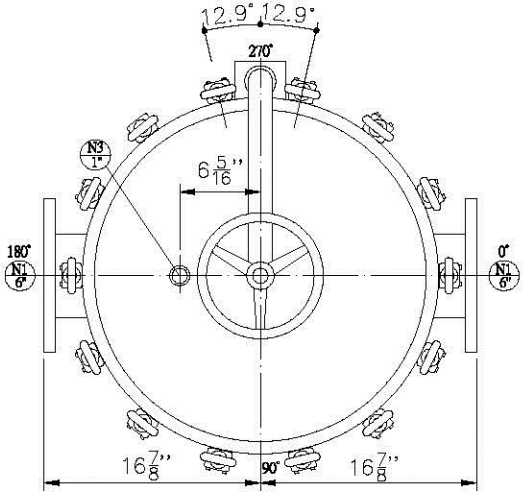
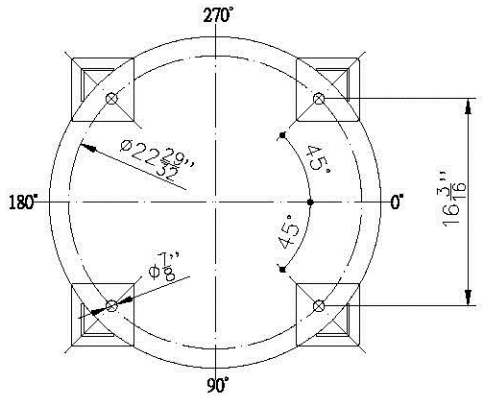


SIDE VIEW



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

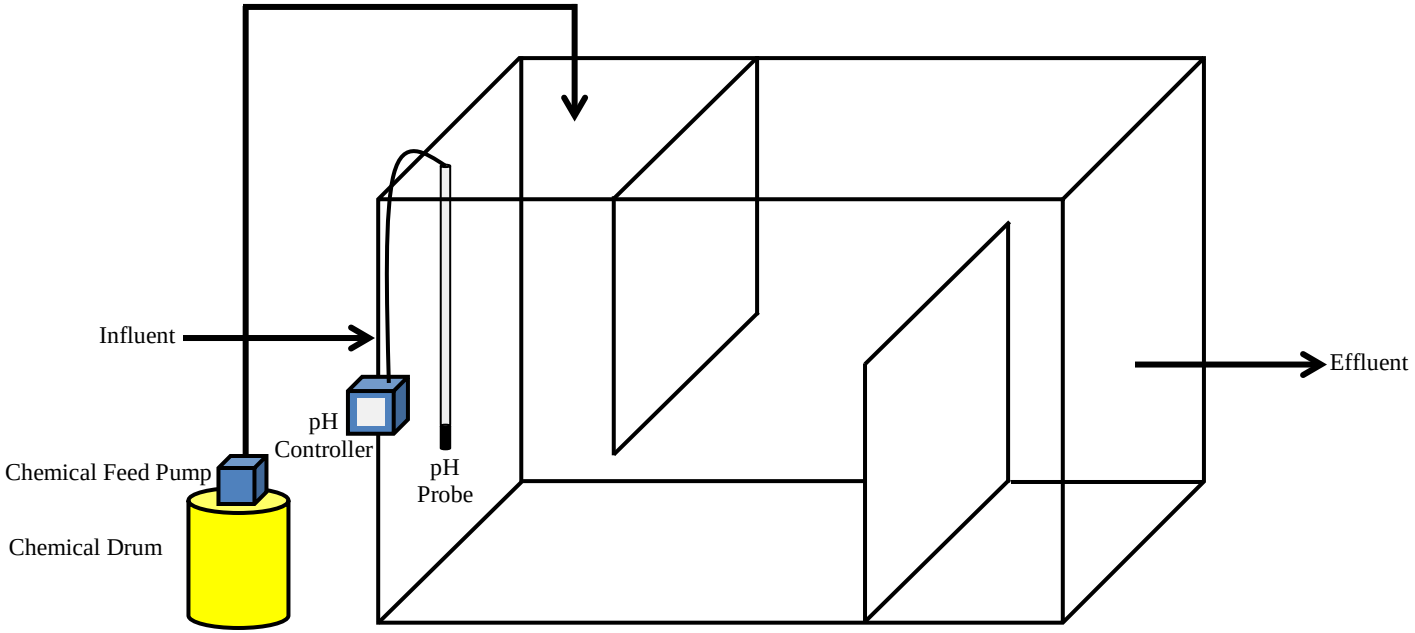
NO.	DESCRIPTION	MATERIAL	UNIT	QUAN.	PART NO.
1	FILTER COVER	304		1	
2	FILTER SHELL	304		1	
3	GASKET	EPDM		1	
4	LEG WELDMENT	304		4	
5	DAVIT HANDWHEEL	304		1	
6	DAVIT SCREW	304		1	
7	DAVIT ARM	304		1	
8	SEPARATE PLATE	304		1	
9	EYENUT	304		14	
10	WASHER	304		14	
11	EYEBOLT	304		14	
12	BOLT SUPPORT	304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



Notes:

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

89 Crawford Street
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Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

Configuration of pH Adjustment System

ne Controller for the Broadest Ran e of Sensors.

Choose from 30 di ital and analo sensor families for u to 1 di:erent arameters.

Ma imum ersatility

The sc200 controller allows the use of di ital and analo sensors, either alone or in combination, to ro ide com atibility with Hach s broad ran e of sensors, eliminatin the need for dedicated, arameter s ecific controllers.

Ease of se and Confidence in Results

ar e, hi h resolution, transreflecti e dis lay ro ides o timal iewin resolution in any li htin condition. Guided calibration rocedures in 19 lan ua es minimi e com le ity and reduce o erator error. Password rotected SD card reader o:ers a sim le solution for data download and transfer. isual warnin system ro ides critical alerts.

Wide ariety of Communication tions

tili e two to fi e analo out uts to transmit rimary and secondary alues for each sensor, or inte rate Hach sensors and analy ers into M DB S RS232/RS48 , Profibus DP, and H RT 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 Com arison

eatures	Previous Mo els sc Controller	Previous Mo els l Controller	sc Controller	ene its
Display	4 128 i els 33 mm (1.3 2. in.)	4 128 i els 33 mm (1.3 2. in.)	1 0 240 i els 48 8 mm (1.89 2. in.) Transreflecti e	Im ro ed user interface 0 bi er Easier to read in dayli ht and sunli ht
Data Management	irD Port/PD Ser ice Cable	N/	SD Card Ser ice Cable	Sim lifies data transfer Standardi ed accessories/ ma com atibility
Sensor Inputs	2 Ma Direct Di ital nalo ia E ternal Gateway	2 Ma nalo De endin on Parameter	2 Ma Di ital and/or nalo with Sensor Card	Sim lifies analo sensor connections Works with analo and di ital sensors
Analog Inputs	N/	N/	1 nalo In ut Si nal nalo 4 20m Card	Enables non sc analy er monitorin cce ts m si nals from other analy ers for local dis lay Consolidates analo m si nals to a di ital out ut
mA utputs	2 Standard	2 Standard	2 Standard tional 3 dditional	Total of fi e ( ) 4 20 m out uts allows multi le m out uts er sensor in ut
Digital Communication	M DB S RS232/RS48 Profibus DP 1.0	H RT	M DB S RS232/RS48 Profibus DP 1.0 H RT .2	n recedented combination of sensor breadth and di ital communication o tions

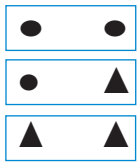
Choose from Hach s Broad Ran e of Di ital and nalo Sensors

Parameter	Sensor	Digital or Analog
mmonia	MT sc, NH4D sc, ISE sc, N ISE sc	●
Chlorine	C 10 sc, C T10 sc, 9184 sc	●
Chlorine Dio ide	918 sc	●
Conducti ity	G I 3400 Contactin , G I 3 00 Inducti e	▲
Dissol ed y en	D Model 2, 40 sc	●
Dissol ed y en	00	▲
low	3, 3 Sensors	▲
Nitrate	NITR T sc, N 3D sc, NISE sc, N ISE sc	●
il in Water	P3 0 sc	●
r anics	S sc	●
one	918 sc	●
H/ RP	HD	●
H/ RP	HD, H Combination, CP	▲
Phos hate	PH SPH sc	●
Slud e e el	S N T sc	●
Sus ended Solids	S IT sc, TSS sc	●
Turbidity	1 20E, T 0 sc, SS sc, TR T RB sc, S IT sc, TSS sc	●
ltra Pure Conducti ity	8310, 8311, 8312, 831 , 831 , 831 Contactin	▲
ltra Pure H/ RP	83 2	▲

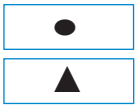
● Di ital ▲ nalo

Connect u to two of any of the sensors listed abo e, in any combination, to meet your a lication needs. The dia rams below demonstrate the otential confi urations. eration of analo sensors re uires the controller to be e ui ed with the a ro riate sensor module. Contact Hach Technical Su ort for hel with selectin the a ro riate module.

Channel Con igurations



Channel Con igurations



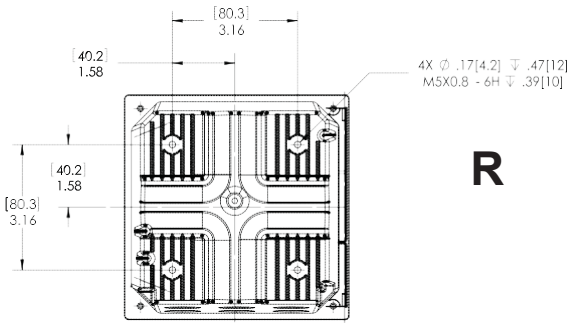
S ecifications

Dimensions D	. in . in .1 in (144 mm 144 mm 181 mm)
Display	Gra hic dot matri CD with ED backli htin , transreflecti e
Display Si e	1.9 2. in. (48 mm 8 mm)
Display Resolution	240 1 0 i els
eight	3. lbs. (1. 0 k)
Power Re uirements oltage	100 240 C, 24 DC
Power Re uirements	0/ 0 H
perating Temperature Range	20 to 0 C , 0 to 9 RH non condensin
Analog utputs	Two(i e with o tional e ansion module) to isolated current out uts, ma 0 Ω , ccuracy: 0.1 of S (20m) at 2 C, 0. of S o er 20 C to 0 C ran e erational Mode: measurement or calculated alue
Analog utput unctional Mo e	inear, o arithmic, Bi linear, PID
Security evels	2 assword rotected le els
Mounting Con igurations	Wall, ole, and anel mountin
nclosure Rating	NEM 4 /IP
Con uit penings	1/2 in NPT Conduit
Relay perational Mo e	Primary or secondary measurement, calculated alue (dual channel only) or timer
Relay unctions	Scheduler (Timer), larm, eeder Control, E ent Control, Pulse Width Modulation, re uency Control, and Warnin
Relays	our electromechanical SPDT (orm C) contacts, 1200 W,
Communication	M DB S RS232/RS48 , PR IB SDP 1, or H RT .2 o tional
Memory ac up	lash memory
lectrical Certi ications	EMC CE com liant for conducted and radiated emissions: CISPR 11 (Class limits) EMC Immunity EN 132 1 (Industrial limits) Safety cET us safety mark for: General ocations er NSI/ 1010 1 C N/CS C22.2. No. 1010 1 Ha ardous ocation Class I, Di ision 2, Grou s ,B,C D (one 2, Grou IIC) er M 3 00 / M 3 11 CS C22.2 No. 213 M198 with a ro ed o tions and a ro riately rated Class I, Di ision 2 or one 2 sensors c us safety mark General ocations er 1010 1 C N/CS C22.2. No. 1010 1

**Subject to change without notice.*

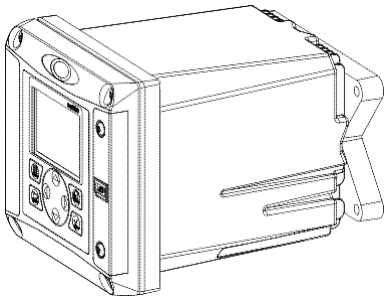
Dimensions

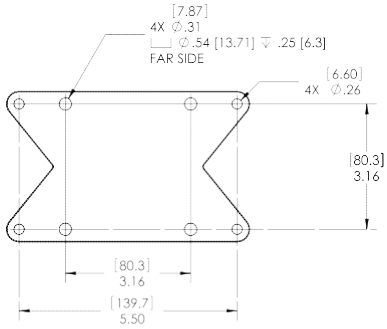
Surface Mounting Dimensions



Mounting Dimensions
(Rear View)

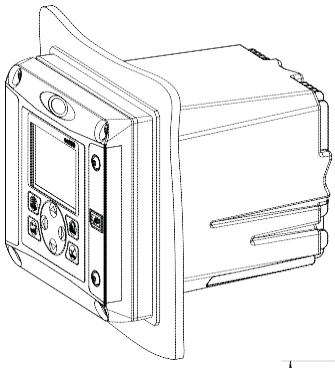
R

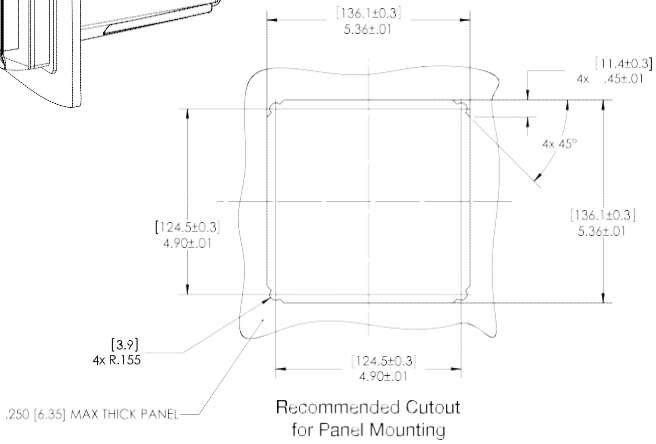




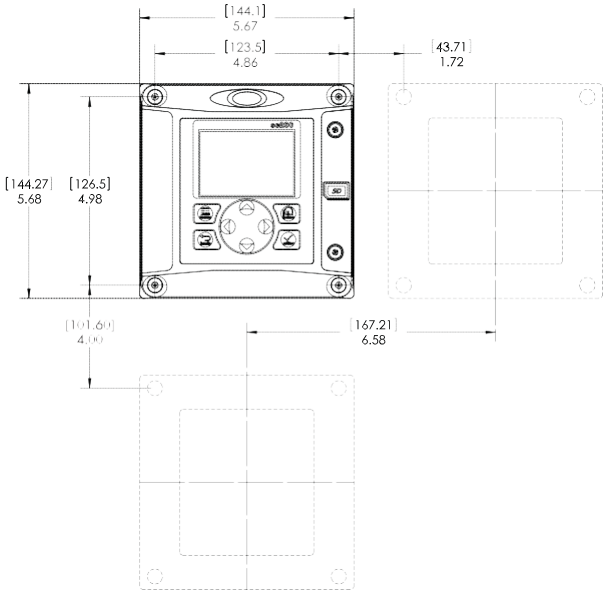
Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield
p/n 9220600 when surface mounting.)

Panel Mounting Dimensions



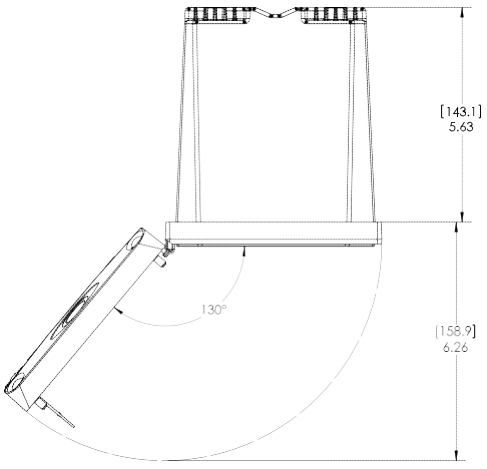


Recommended Cutout
for Panel Mounting

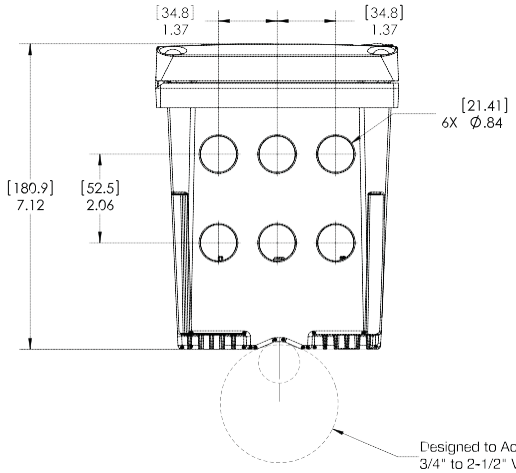


Minimum Spacing Dimensions
for Group Mounting

Top and Bottom Views



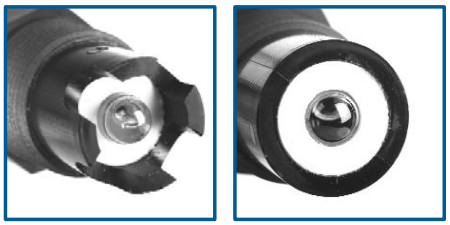
Door Opening Details



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

inch Com ination p an RP Sensor its

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

ow Price igh Per ormance

These combination sensors are desi ned for s ecialty a lications for immersion or in line mountin . The reference cell features a double unction desi n for e tended ser ice life, and a built in solution round. The body is molded from chemically resistant Ryton or P D , and the reference unction is coa ial orous Teflon . ll sensors are rated 0 to 10 C u to 100 si , and ha e inte ral 4. m (1 ft.) cables with tinned leads. The PC series (for H) and RC series (for RP) combination sensors are ideal for measurin mild and a ressi e media.

Special lectro e Con igurations

Sensors with ru ed dome electrodes, easy to clean flat lass electrodes, and e en H (hydrofluoric acid) resistant lass electrodes are a ailable for a wide ariety of rocess solutions.

Temperature Compensation lement ption

The PC series combination H sensors are a ailable with or without a Pt 1000 ohm RTD tem erature element. The RC series combination RP sensors are su lied without a tem erature element.

ersatile Mounting Styles

Sensors are a ailable in three mountin styles con ertible, insertion, and sanitary. Please turn to a e 3 for more information.

ull eature Plug an Play ach sc Digital Controllers

There are no com licated wirin or set u rocedures with any Hach sc controller. ust lu in any combination of Hach di ital sensors and it s ready to use it s lu and lay.

ne or multiple sensors The sc controller family allows you to recei e data from u to ei ht Hach di ital sensors in any combination usin a sin le controller.

Communications Multi le alarm/control schemes are a ailable usin the relays and PID control out uts. ailable communications include analo 4 20 m , di ital M DB S (RS48 and RS232) or Profibus DP rotocols. (ther di ital rotocols are a ailable. Contact your Hach re resentati e for details.)

Data logger built in data lo er collects measurement data, calibration, erification oints, and alarm history.

Specifications*

Most H a lications fall in the 2. 12. H ran e. General ur ose H lass electrodes erform well in this ran e. Some industrial a lications re uire accurate measurements and control at H alues below 2 or abo e 12. Consult Hach Technical Su ort for details on these a lications.

Com ination p Sensors

Measuring Range
0 to 14 H

Accuracy
ess than 0.1 H under reference conditions

Temperature Range
0 to 10 C (32 to 221)

Flow Rate
0 to 2 m/s (0 to . ft./s); non abrasi e

Pressure Range
0 to .9 bar at 100 C (0 to 100 si at 212)

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

1000 m (3280 ft.) when used with the Hach Di ital Gateway, Termination Bo , and a Hach sc Di ital Controller.

Sensor Cable
Inte ral coa ial cable (lus two conductors for tem erature com ensator o tion); 4. m (1 ft.) lon

Wetted Materials

Convertible style: Ryton body (lass filled)

Insertion style: P D body (ynar)

Sanitary style: 31 stainless steel slee ed P D body

Common materials for all sensor styles include PT E Teflon double unction, lass rocess electrode, and iton rin s

Warranty
90 days

Com ination RP Sensors

Measuring Range
2000 to 2000 milli olts

Accuracy
imited to calibration solution accuracy (20 m)

Temperature Range
0 to 10 C (32 to 221)

Flow Rate
0 to 2 m/s (0 to . ft./s); non abrasi e

Pressure Range
0 to .9 bar at 100 C (0 to 100 si at 212)

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

1000 m (3280 ft.) when used with the Hach Di ital Gateway, Termination Bo , and a Hach sc Di ital Controller.

Sensor Cable
Inte ral coa ial cable; 4. m (1 ft.) lon ; terminated with stri ed and tinned wires

Wetted Materials

Convertible style: Ryton body (lass filled)

Insertion style: P D body (ynar)

Common materials for all sensor styles include PT E Teflon double unction, lass with latinum rocess electrode, and iton rin s

Warranty
90 days

**Specifications subject to change without notice.*

Ryton® is a registered trademark of Phillips 66 Co.; Viton® is a registered trademark of E.I. DuPont de Nemours + Co.; Kynar® is a registered trademark of Pennwalt Corp.

Engineering Specifications

1. The H sensor shall be a ailable in con ertible, insertion or sanitary styles. The RP sensor shall be a ailable in only con ertible or insertion styles.
2. The con ertible style sensor shall ha e a Ryton body. The insertion style sensor shall ha e a P D body. The sanitary style sensor shall ha e a 31 stainless steel slee ed P D body. Common materials for all sensor styles shall include a PT E Teflon double unction, and iton rin s. The H sensor shall ha e a lass H electrode. The RP sensor shall ha e a latinum RP electrode.
3. The con ertible style H sensor shall be a ailable with or without a built in Pt 1000 ohm RTD tem erature element. Insertion and sanitary style H sensors shall ha e a built in Pt 1000 ohm RTD tem erature element. Con ertible and insertion style RP sensors shall not ha e a built in tem erature element.
4. The sensor shall communicate ia M DB S RS 48 to a Hach sc Di ital Controller.

. The sensor shall be Hach Com any Model PC sc or PC series for H measurement or Model PC sc or RC series for RP measurement.

Dimensions

Converti le Style Sensor

The con ertible 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 i e tee for flow throu h mountin or fastened onto the end of a i e for immersion mountin . The con ertible style sensor enables in entory consolidation, thereby reducin associated costs. Mountin tees and immersion mountin hardware are offered in a ariety of materials to suit a lication re uirements.

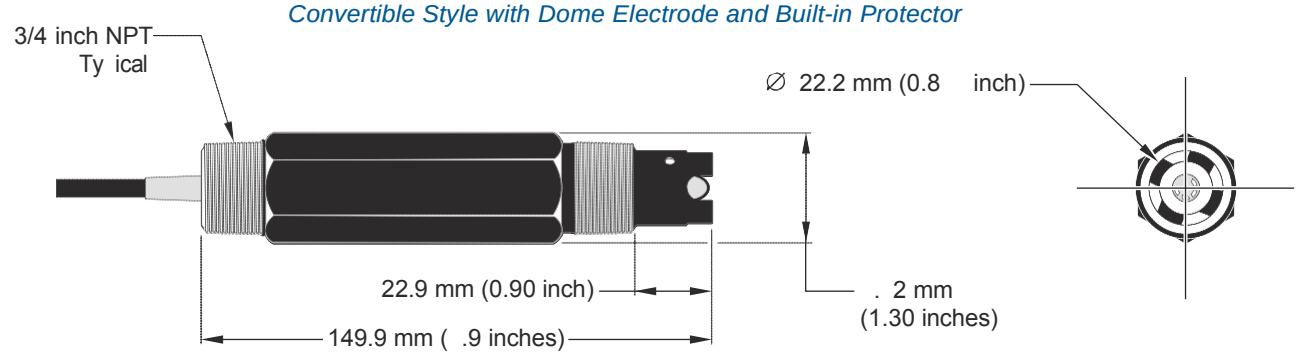
Insertion Style Sensor

Insertion style sensors feature a lon er, non threaded P D body with two iton rin s, ro idin a seal when used with the o tional Hach insertion mount hardware assembly. This ball al e hardware enables sensor insertion and retraction from a i e or essel without ha in to sto the rocess flow.

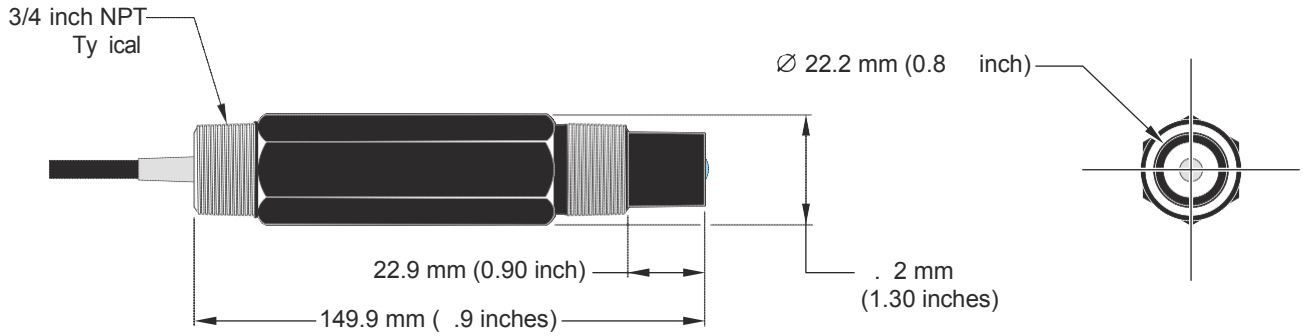
Sanitary Style Sensor

The sanitary style sensor, offered for H measurement, has a 31 stainless steel slee ed P D body with a 2 inch flan e. The sensor mates to a standard 2 inch Tri Clo er fittin . The o tional Hach sanitary mountin hardware includes a standard 2 inch sanitary tee, sanitary clam , and iton sanitary asket.

Convertible Style with Dome Electrode and Built-in Protector



Convertible Style with Flat Electrode



The Pulsatron Series Plus offers manual function controls o er stroke len th and stroke rate as standard with the o tion to select e ternal ace for automatic control.

Ten distinct models are a ailable, ha in ressure ca abilities to 2 0 PSIG (1 B R) 12 GP (1.9 l h), and flow ca acities to 8 GP (9.1 l h) 100 PSIG (.0 B R), with a standard turndown ratio of 100:1, and o tional ratio of 1000:1. Meterin erformance is re roducible to within 3 of ma imum ca acity.

Features

- Manual Control by on line ad ustable stroke rate and stroke len th.
- Hi hly Reliable timin circuit.
- Circuit Protection a ainst olta e and current u sets.
- Solenoid Protection by thermal o erload with auto reset.
- Water Resistant, for outdoor and indoor a lications.
- Internally Dam ened To Reduce Noise.
- Guided Ball Check al e Systems, to reduce back flow and enhance outstandin rimin characteristics.
- ew Mo in Parts and Wall Mountable.
- Safe Easy Primin with durable leak free bleed al e assembly (standard).
- tional Control: E ternal ace with auto/manual selection.

Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

Controls tions		
eature	Standard Confi uration	tional Confi uration [1]
E ternal Pacin	--	uto / Manual Selection [2]
E ternal Pace w/ Sto (12 SPM only)	--	uto / Manual Selection [2]
Manual Stroke Rate	10:1 Ratio	100:1 Raio
Manual Stroke en th	10:1 Ratio	10:1 Ratio
Total Turndown Ratio	1001 Ratio	1000:1 Ratio

Note 1: n S2, S3 S4 si es only.

Note 2: Not a ailable on 1000:1 turndown um s.

Operating Benefits

- Reliable meterin erformance.
- Rated hot for continuous duty.
- Hi h iscosity ca ability.
- eak free, sealless, li uid end.

Aftermarket

- Pkits
- Gau es
- Dam eners
- Pressure Relief al es
- Tanks
- Pre En ineered Systems
- Process Controllers
- (P S blue, Micro ision)

Series A Plus lectronic Metering Pumps

Lockwood Remediation Technologies, LLC

Series A Plus

Specifications and Model Selection

M DE			BC2	B02	BC3	B03	B04	B 4	BC4	BS2	BS3	BS4
Ca acity nominal (ma .)		GPH	02	02	0.42	0. 0	1.00	12	2.00	0. 0	1.38	2.42
		GP			10	12	24	30	48	12	33	8
		PH	0.9	0.9	1.	1.9	3.8	4.	.	1.9	.2	9.14
Pressure[3] (ma .)	G PP,P D ,31 SS orP C<;Ncode) wIT E Seats)	PSIG (Bar)	2 0(1)	1 0(10)	2 0(1)	1 0(10)	100( )	100 (7)	0(3.3)	2 0(1)	1 0(10)	100( )
	P C(code) iton or CSPE Seats lDe as i uid End		1 0(10)							1 0(10)		
Connections:		Tubina	1 4 ID 3 8 D						3 8 D 1 2 D	1 4 D 3 8 D		
		Pioina	1 4 NPT									
Strokes/Minute		SPM	12							2 0		

Note 3: Pum s with rated ressure abo e 1 0 PSI will be de rated to 1 0 PSI Ma . when selectin certain al e o tions, see Price Book for details.

Engineering Data

Pum Head Materials ailable: G PP
P C
P D
31 SS

Dia hra m: PT E faced CSPE backed

Check al es Materials ailable:

Seats/0 Rin s: PT E
CSPE
iton

Balls: Ceramic
PT E
31 SS
lloy C

ittin s Materials ailable: G PP
P C
P D

Bleed al e: Same as fittin and check al e selected, e ce t 31 SS

In ection al e oot al e ssy: Same as fittin and check al e selected

Tubin : Clear P C
White PE

Im ortant: Material Code G PP Glass filled Poly ro ylene, P C Poly inyl Chloride, PE Polyethylene, P D Poly inylidene luoride, CSPE Generic formulation of Hy alon, a re istered trademark of E.I. DuPont Com any. iton is a re istered trademark of E.I. DuPont Com any. P C wetted end recommended for sodium hy ochlorite.

Engineering Data

Re roducibility: / 3 at ma imum ca acity
iscosity Ma CPS: 1000 CPS
Stroke re uency Ma SPM: 12 / 2 0 by Model
Stroke re uency Turn Down Ratio: 10:1 / 100:1 by Model
Stroke en th Turn Down Ratio: 10:1
Power In ut: 11 C/ 0 0 H /1 h
230 C/ 0 0 H /1 h
era e Current Draw:
11 C; m s: 0. m s
230 C; m s: 0.3 m s
Peak h ut Power: 130 Watts
era e In ut Power Ma SPM: 0 Watts

Custom Engineered Designs - Pre-Engineered Systems

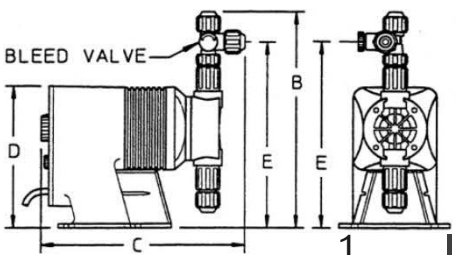
Pre En ineered Systems

Pulsafeeder s Pre En ineered Systems are desi ned to ro ide com lete chemical feed solutions for all electronic meterin a lications. rom stand alone sim le H control a lications to full featured, redundant sodium hy ochlorite disinfection meterin , these ru ed fabricated assemblies offer turn key sim licity and industrial rade durability. The stabili ed, hi h rade H PE frame offers ma imum chemical com atibility and structural ri idity. Each system is factory assembled and hydrostatically tested rior to shi ment.

Dimensions

Series P S Dimensions (inches)						
Model No.		B	C	D	E	Shi in Wei ht
B02 IS2	.0	9.	9.	.	8.2	10
BC2	.0	9.9	9.	.	8.	10
BC3	.0	9.9	9.	.	8.	10
B03 IS3	.0	9.9	9.	.	8.	10
B0 S4	.0	9.9	9.	.	8.	10
B 4	.0	9.9	9.	.	8.	10
BC4	.0	9.9	9.	.	8.	10

N TE: Inches 2. 4 cm



allon verPac ia . each pac age

Stock a S illTech erPack with sorbents for emer ency s ill res onse, or use it as a sal a e drum to shi dama ed containers or ha ardous waste.

D T ro ed for Sal a e: ll S illTech erPacks are D T a ro ed and rated for use as sal a e drums. Hel s com anies conform to federal re ulations when shi in dama ed or leakin containers of ha ardous materials, or absorbents contaminated with ha ardous substances.

Perfect for S ill its: Stores sorbent roducts (not included) for easy access as needed for s ill control. Sa es time when uick res onse is necessary.

Sturdy Construction: 100 olyethylene erPack resists chemicals, rust and corrosion for years of use. Inte rated handles make them easy to lift, mo e or carry with standard material handlin e ui ment. Twist on, double wall lid with closed cell asket ro ides sealed, secure closure to re ent leaks and rotect contents from moisture, dirt and dama e. Durable to withstand rou h handlin .

Customi ed for ou: We can customi e a S ill it to your e act s ecifications, includin the container, its contents and accessories, with no u char e Contact your local Distributor for details.

A R Speci ications

Dimensions	e t. dia. 32 41. H
Shipping Dimensions	31. W 41. 31. H
Sol as	1 er acka e
Color	ellow
Composition	Polyethylene
per Pallet	3
Incinera le	No
Ship Class	2 0

Metric uivalent Speci ications

Dimensions	e t. dia. 81.3cm 10 .4cm H
Shipping Dimensions	80. cm W 10 .4cm 80. cm H

A R Technical In ormation

arnings Restrictions

There are no known warnin s and restrictions for this roduct.

Regulations an Compliance

49 C R 1 3.3(c)(1) If a container of ha ardous waste is dama ed or leakin , it can be laced in a com atible sal a e drum that meets N criteria for shi in

49 C R 1 3.12(b)(2)(i) When lab ackin , Inner acka in s must be surrounded by a chemically com atible absorbent material in sufficient uantity to absorb the total li uid contents.

49 C R 1 3.12(b) container used for lab ackin must be a N 1 2 or N 1B2 metal drum, a N 1D lywood drum, a N 1G fiber drum or a N 1H2 lastic drum tested and marked at least for the Packin Grou III erformance le el for li uids or solids.

Appendix D

Supporting Information

LRT
Lockwood Remediation
Technologies LLC

DILUTION CALCULATIONS
North Reservoir Dam
Winchester, MA

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

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

ASSUMPTIONS FOR 500 GPM SYSTEM

7Q10 is 0.205 cubic feet per second (cfs) - from StreamStats 4.6.1
A conversion of 7.48 is used to convert cubic feet to gallons
A design flow rate of 500 gallons per minute (gpm) is assumed

CALCULATIONS

7q10 Low Flow Value (Q_S)

$$Q_S = \frac{0.00721\ ft^3}{sec} \times \frac{7.48\ gallons}{ft^3} \times \frac{86{,}400\ sec}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons} = 0.00466\ MGD$$

Discharge Flow Rate (Q_D)

$$Q_D = \frac{500\ gallons}{min} \times \frac{1{,}440\ min}{day} \times \frac{1MG}{1{,}000{,}000\ gallons} = 0.72\ MGD$$

Dilution Factor (DF)

$$DF = \frac{Q_S + Q_D}{Q_D} = \frac{0.00466\ MGD + 0.72\ MDG}{0.72\ MGD} = 1.0065$$

Dilution Factor	1.0			
	TBEL applies if bolded		WQBEL applies if bolded	
A. Inorganics				
Ammonia	**Report**	mg/L	---	
Chloride	**Report**	µg/L	---	
Total Residual Chlorine	0.2	mg/L	**11**	µg/L
Total Suspended Solids	**30**	mg/L	---	
Antimony	**206**	µg/L	644	µg/L
Arsenic	**104**	µg/L	10	µg/L
Cadmium	**10.2**	µg/L	0.2154	µg/L
Chromium III	**323**	µg/L	66.9	µg/L
Chromium VI	**323**	µg/L	11.5	µg/L
Copper	**242**	µg/L	7.2	µg/L
Iron	5000	µg/L	**1006**	µg/L
Lead	**160**	µg/L	2.14	µg/L
Mercury	**0.739**	µg/L	0.91	µg/L
Nickel	**1450**	µg/L	40.2	µg/L
Selenium	**235.8**	µg/L	5.0	µg/L
Silver	**35.1**	µg/L	2.2	µg/L
Zinc	**420**	µg/L	92.1	µg/L
Cyanide	**178**	mg/L	5.2	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	302	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
Benzo(a)pyrene	1.0	µg/L	**0.0038**	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0038**	µg/L
Benzo(k)fluoranthene	1.0	µg/L	**0.0038**	µg/L
Chrysene	1.0	µg/L	**0.0038**	µg/L
Dibenzo(a,h)anthracene	**1.0**	µg/L	0.0038	µg/L
Indeno(1,2,3-cd)pyrene	**1.0**	µg/L	0.0038	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---	
Naphthalene	**20**	µg/L	---	
E. Halogenated SVOCs				
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---	
Pentachlorophenol	**1.0**	µg/L	---	
F. Fuels Parameters				
Total Petroleum Hydrocarbons	**5.0**	mg/L	---	
Ethanol	**Report**	mg/L	---	
Methyl-tert-Butyl Ether	**70**	µg/L	20	µg/L
tert-Butyl Alcohol	**120**	µg/L	---	
tert-Amyl Methyl Ether	**90**	µg/L	---	

Energy & Environmental Affairs
Data Portal

Waste Site & Reportable Releases Information

Related links

Supporting Documents
(https://eeaonline.eea.state.ma.us/EEA/fileviewer/Rtn.aspx?rtn=3-0037044)
LSP Lookup

Site Number ?
3-0037044

Category ?
120 DY

Site Name ?
NORTH RESERVOIR DAM

AUL Info ?

Compliance Status ?
UNCLASSIFIED

Address ?
N BORDER ROAD

Compliance Date ?
09/15/2021

Town ?
WINCHESTER

Phase ?

Zip Code ?
01890

RAO Class ?

Official Notification Date ?
09/15/2021

Location Type ?

Initial Status Date ?
09/15/2022

Source ?
UNKNOWN

Response Action Information

RESPONSE ACTION TYPE	STATUS	SUBMITTAL DATE	RAO CLASS	ACTIVITY & USE LIMITATION DATE
RNF Release Notification Form Received	REPORT Reportable Release or Threat of Release	09/15/2021		
REL Potential Release or Threat of Release	REPORT Reportable Release or Threat of Release	09/15/2021		

Chemicals

CHEMICAL	AMOUNT	UNITS
LEAD	2600.000	MG/KG
BENZO[A]PYRENE	2.900	MG/KG

Location

MassDEP - Bureau of Waste Site Cleanup

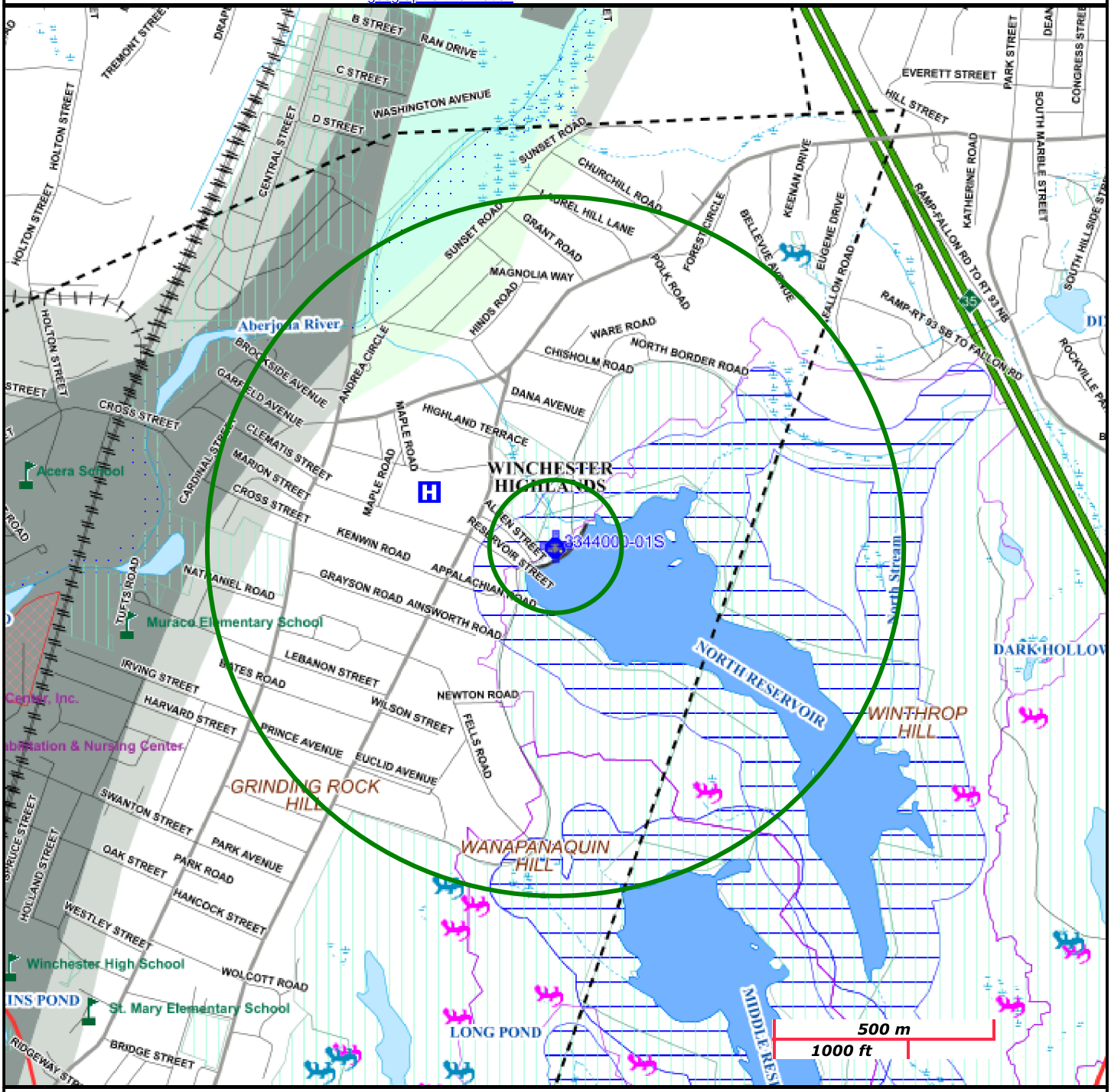
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
WINCHESTER DAM
12 RESERVOIR STREET WINCHESTER, MA

NAD83 UTM Meters:
4703567mN , 325767mE (Zone: 19)
March 9, 2022

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.

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Date: 3/9/2022

Search Criteria: Town(s): Winchester; Street Name: Hillcrest;

Inv. No.	Property Name	Street	Town	Year	Designations
WNT.923	Hillcrest Parkway	Hillcrest Pkwy	Winchester	R 1900	NRMPS; NRDIS;
WNT.431	Caser, Ettore House	10 Hillcrest Pkwy	Winchester	1914	
WNT.432	Bedford, Pembroke House	20 Hillcrest Pkwy	Winchester	C 1898	
WNT.433	Galusha, Rufus B. House	30 Hillcrest Pkwy	Winchester	C 1911	

United States Department of the Interior

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

In Reply Refer To: March 09, 2022
Project Code: 2022-0017933
Project Name: Winchester Dam Improvements

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:

Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

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. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

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 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. 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 by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/newengland/endangeredspecies/project-review/index.html

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines 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 Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. 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

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) 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. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/birds/policies-and-regulations.php

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

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

Project Code: 2022-0017933
Event Code: None
Project Name: Winchester Dam Improvements
Project Type: Dam - Maintenance/Modification
Project Description: Improvements being made to both the water side and dry side of the dam
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.46491485,-71.1190235580899,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

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

Critical habitats

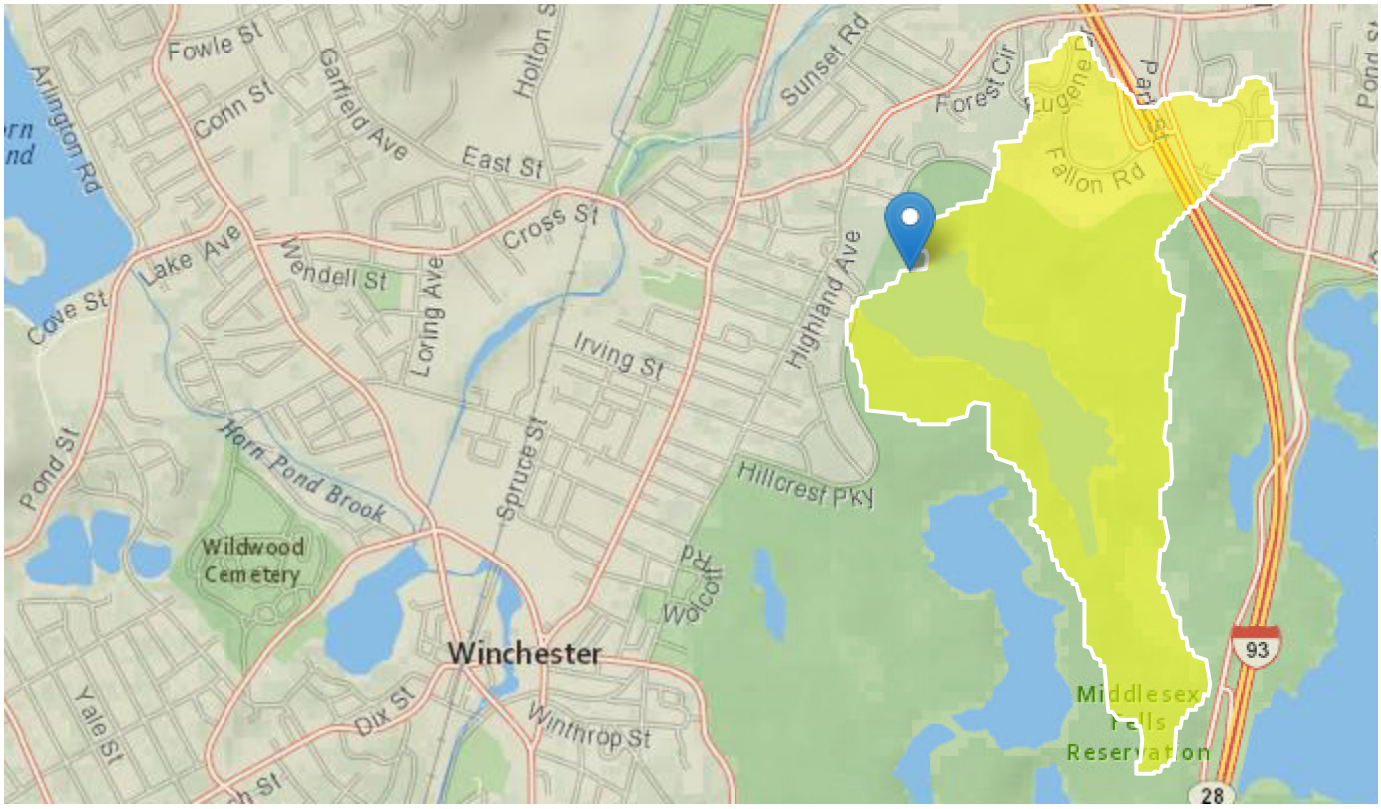
THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency: Lockwood Remediation Technologies LLC
Name: Carlo Lombardo
Address: 89 Crawford Street
City: Leominster
State: MA
Zip: 01453
Email clombardo@lrt-llc.net
Phone: 8604810701

StreamStats Report

Region ID: MA
Workspace ID: MA20220309220158694000
Clicked Point (Latitude, Longitude): 42.46513, -71.11815
Time: 2022-03-09 17:02:22 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.62	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	3.289	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.0244	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.62	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	3.289	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.0244	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0233	ft^3/s
7 Day 10 Year Low Flow	0.00721	ft^3/s

Low-Flow Statistics Citations

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

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Application Version: 4.7.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2