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

September 28, 2020

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)**
100 CambridgeSide Place
Cambridge, Massachusetts

Dear Sir/Madam:

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

**Site Information**

This NOI has been prepared for the management groundwater that will be generated during dewatering activities associated with drilling activities. The project is to take place in the existing lower garage of the CambridgeSide Mall located at 100 CambridgeSide Place in Cambridge, Massachusetts (the Site). Work will take place beneath the existing mall in the lowest level of the parking garage. The work is anticipated to be completed within twelve months. A Site Locus is provided as **Figure 1** and a Site Plan satisfying the requirements of RGP Appendix IV Part I.B and I.D is provided as **Figure 2**.

**Work Summary**

The work includes installation of new micro piles below the existing garage floor to reinforce the garage foundations. LRT understands that the subsurface beneath the garage has the potential for artesian conditions during drilling and therefore the installation of depressurization wells is planned. The water generated during depressurization/dewatering (Source water) will be pumped to a water treatment system. Treated water will discharge to one of two catch basins, both with final outfalls in the Lechmere Canal. LRT collected two representative groundwater samples on September 11, 2020 to characterize groundwater from the proposed dewatering/depressurization area. One sample was collected from the building's existing underdrainage system and one sample was collected from a deep monitoring well

drilled into bedrock. The sample locations are depicted on **Figure 2**. A sample of the receiving water (Lechmere Canal) was also collected on September 11, 2020. The samples were analyzed for various parameters in accordance with the NPDES RGP Activity Category III-G.

**Discharge and Receiving Surface Water Information**

A summary of the analytical results is provided in **Tables 1 and 2** included within **Appendix A**, and copies of the laboratory data reports are provided in **Appendix B**. Concentrations of Arsenic and Total Suspended Solids were detected in groundwater at concentrations above the respective NPDES RGP Effluent Limitations. To meet these standards, Source water will undergo treatment that includes chemical aided settling, pH adjustment and bag filtration prior to discharge. It is assumed that metal concentrations will be handled by settling and bag filtration. Carbon filtration and ion exchange have been provided as contingency options if additional analytes are encountered. Details of the water treatment system are provided below.

**Water Treatment System**

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

Source water will be pumped to the primary water treatment system with a design flow of up to 300 gallons per minute (gpm); the average effluent flow of the system is estimated to be 150 gpm, and the maximum flow will not exceed 300 gpm. Source water will enter frac tanks, plumbed in parallel, at the head of the system, the water will be treated with pH adjustment (sulfuric acid), LRT E50 coagulant and LRT 823 flocculant inside the frac tanks. From the frac tanks, water will flow to weir tanks plumped in parallel. From the weir tanks, water will then be pumped to a multi-bag filter skid (made up of two multi bag filter housings each housing containing six bag filters). Discharge from the bag filter will pass through a flow/totalizer meter prior to discharge.

If required, contingency treatment will include carbon and/or ion exchange media. Discharge from the media vessels will pass through a flow/totalizer meter prior to discharge into the Lechmere Canal. The discharge will be at one location (Discharge Location 1) as depicted on **Figure 2**. Effluent sampling will correspond with this discharge location.

**Chemical and Additive Information**

Due to the use of bentonite grout during drilling activities, it is possible the pH of the Source water will become elevated. Therefore, a pH adjustment system will be included to maintain discharge pH to within discharge limits.

The pH reduction system includes an automatic metered acid feed system with a mix tank, acid feed pumps and setpoint controls that maintain the pH to within discharge parameters. The maximum application concentration for sulfuric acid would be 333 mg/L.

The addition of pH conditioners will not add any pollutants in concentrations which exceed permit effluent limitations; 2) The use of these chemicals will not result in the exceedance of any applicable water quality standard; and 3) These chemicals will not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit. The addition of sulfuric acid to control pH is a standard treatment for temporary construction dewatering; it is not expected to exceed applicable permit limitations and water quality standards or alter conditions in the receiving water. No additional testing is considered necessary for use of this product or to demonstrate that use of this product will not adversely affect the receiving water.

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

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

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

**Consultation with Federal Services**

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

**Coverage under NPDES RGP**

It is our opinion that the proposed discharge is eligible for coverage under the NPDES RGP. On behalf of John Moriarty & Associates, Inc., we are requesting coverage under the NPDES RGP for the discharge of treated wastewater to the Lechmere Canal in support of dewatering activities that are to take place at 100 CambridgeSide Place.

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, JMA is considered the Operator and has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications.

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

Sincerely,
Lockwood Remediation Technologies, LLC

Jacob Jennings

Jacob Jennings
Staff Scientist

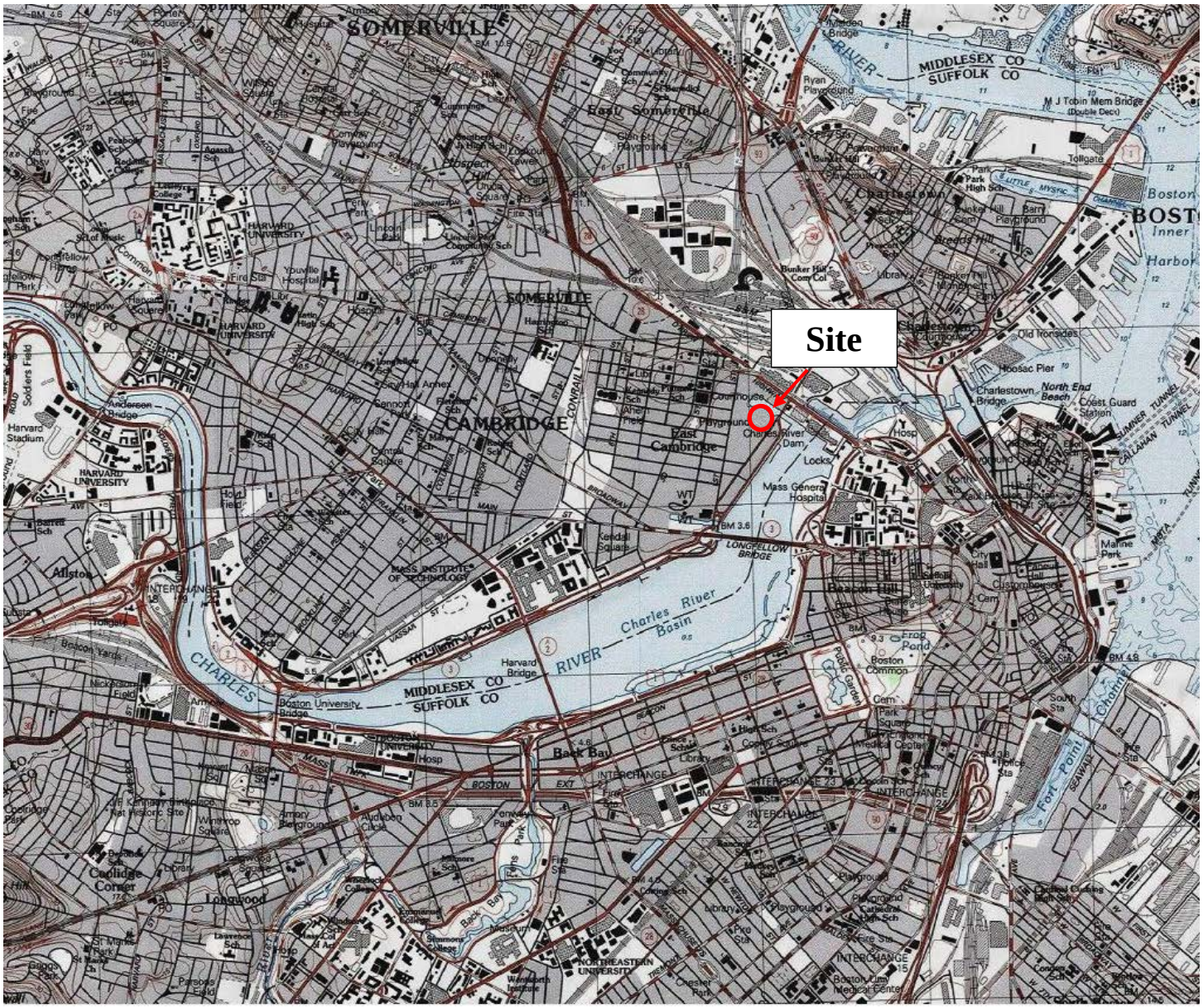
Kim Gravelle

Kim Gravelle, P.G.
Senior Project Manager

Encl: Figure 1 - Locus Plan
Figure 2 - Site Plan
Figure 3 - Water Treatment System Schematic
Appendix A - NOI Form
Appendix B - Laboratory Data
Appendix C - Water Treatment System
Appendix D – Safety Data Sheets
Appendix E - Supplemental Information

cc: Cathy Vakalopoulos – Mass DEP
Kim Gravelle – LRT
Al Vautour – JMA

# Figures




Source: ArcGIS Map Viewer

N

**Notes**

1. Figure is not to scale.


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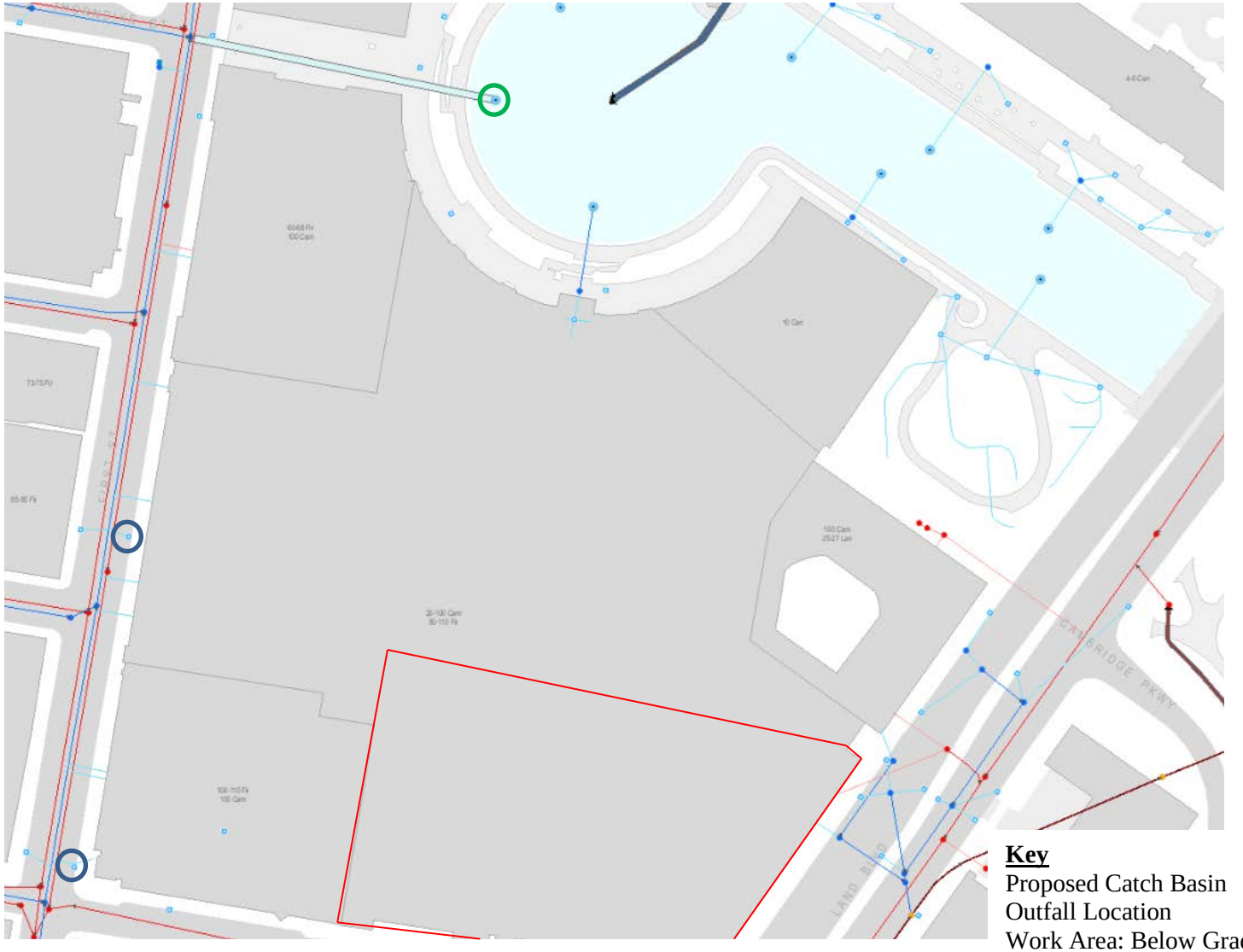
**Figure 1 – Locus Plan**
100 Cambridgeside Place
Cambridge, MA



**Key**

Proposed Catch Basin

Outfall Location

Work Area: Below Grade In Lowest Level Garage

**Notes**

1. Figure is not to scale.


Lockwood Remediation Technologies LLC

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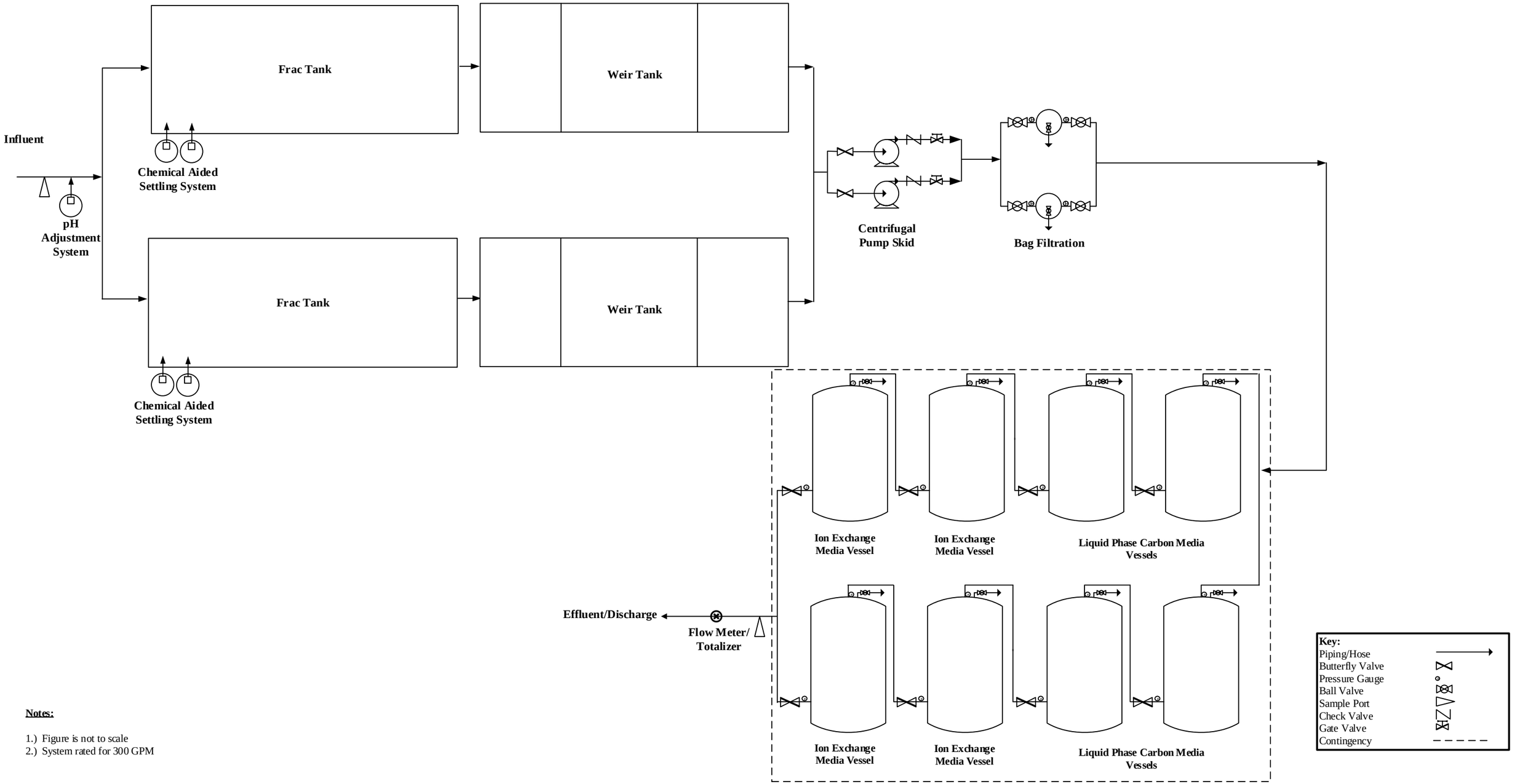
**Figure 2 – Site Layout**
100 Cambridgeside Place
Cambridge, Massachusetts




**Notes:**

1.) Figure is not to scale
2.) System rated for 300 GPM


Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453
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**DESIGNED BY:** LRT **DRAWN BY:** JHJ

**CHECKED BY:** **DATE:**

# Water Treatment System Schematic

**100 Cambridgeside Place**
**Cambridge, MA**

**PROJECT No.** 2-2085

**FIGURE No.** 3

# Dilution Calcs

**From:** Ruan, Xiaodan (DEP)
**To:** Jake Jennings
**Cc:** Vakalopoulos, Catherine (DEP)
**Subject:** RE: Dilution Calcs 100 Cambridgeside Place
**Date:** Thursday, September 24, 2020 2:46:12 PM
**Attachments:** image001.jpg

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Hi Jake,

Yes, there will be no dilution allowed in the Lechmere Canal for the project at 100 Cambridgeside Place, Cambridge. I know you already had the water quality and online application information, but I included them in this email again.

Here is water quality information in assisting you in filling out the NOI:

> Waterbody and ID: Charles River (MA72-38) within Charles River Watershed
> Classification: B
> Outstanding Resource Water?: no
> State's most recent Integrated List is located here: https://www.epa.gov/sites/production/files/2020-01/documents/2016-ma-303d-list-report.pdf, search for "MA72-38" to see the causes of impairments.
> TMDLs: there are two approved TMDL (pathogen and nutrients) for this segment.

As you know, if this is not a *current* MCP site, then in addition to submitting the NOI to EPA, you need to apply with MassDEP and submit a $500 fee (unless fee exempt, e.g., municipality). For MassDEP's application, please use ePLACE, an online application submittal process where you will set up a user ID and be able to submit NOIs for various projects as well as pay by credit card. The instructions are located on this page: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent. Technical assistant information is available on the front page of the ePLACE application webpage.

Please let me know if you have any questions.

Thanks,
Xiaodan

---

**From:** Jake Jennings <JJennings@lrt-llc.net>
**Sent:** Thursday, September 24, 2020 10:14 AM
**To:** Vakalopoulos, Catherine (DEP) <catherine.vakalopoulos@mass.gov>
**Cc:** Ruan, Xiaodan (DEP) <xiaodan.ruan@mass.gov>
**Subject:** Dilution Calcs 100 Cambridgeside Place

recognize the sender and know the content is safe.

Hi Cathy,

Please see dilution calcs for 100 Cambridgeside Place for your review and approval.

The Project:

100 Cambridgeside Place  Cambridge, MA
We plan to discharge into a catch basin with a final out fall in the Lechmere Canal (Charles River MA72-38)

The 7 Day 10 year flow value from the streamstats report is not available because the Lechmere canal does not receive enough flow. Please confirm.

Let me know if you have any questions.

Thank you,

Jake Jennings

**Lockwood Remediation Technologies, LLC**
89 Crawford Street
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O: 774.450.7177
F: 888.835.0617
M: 978.751.5431
jjennings@lrt-llc.net

# Appendix A

# NOI Form

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

### A. General site information:

<table>
<tr><td rowspan="4">1. Name of site:<br>100 Cambridgeside Place</td><td colspan="3">Site address: 100 Cambridgeside Place<br>Street:</td></tr>
<tr><td>City: Cambridge</td><td>State: MA</td><td>Zip: 02141</td></tr>
<tr><td colspan="3">Contact Person: John Twohig</td></tr>
<tr><td colspan="3">Telephone: 617-965-8700 Email: jtwohig@nedevelopment.com</td></tr>
<tr><td rowspan="4">2. Site owner<br>Cambridgeside Galleria Associates Trust<br>C/O New England Development<br><br>Owner is (check one): ☐ Federal ☐ State/Tribal ■ Private<br>☐ Other; if so, specify:</td><td colspan="3">Mailing address: 75 Park Plaza<br>Street:</td></tr>
<tr><td>City: Boston</td><td>State: MA</td><td>Zip: 02116</td></tr>
<tr><td colspan="3">Contact Person: Al Vautour</td></tr>
<tr><td colspan="3">Telephone: 781-953-6715 Email: avautour@jm-a.com</td></tr>
<tr><td rowspan="3">3. Site operator, if different than owner<br>John Moriarty & Associates</td><td colspan="3">Mailing address:<br>Street: 3 Church Street</td></tr>
<tr><td>City: Winchester</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td colspan="3">4. NPDES permit number assigned by EPA:<br><br>NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP<br>☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td></tr>
<tr><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):<br>☐ MA Chapter 21e; list RTN(s):<br>☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:<br>☐ CERCLA<br>☐ UIC Program<br>☐ POTW Pretreatment<br>☐ 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): |
|---|---|---|
| Lechmere Canal | MA72-38 | Class B |

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

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

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

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

| | |
|---|---|
| 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. | See Attached Correspondence |
| 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. | See Attached Correspondence |

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: 9/24/2020

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<br><br>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):<br>■ Yes ☐ No | ☐ Contaminated surface water<br><br>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):<br>☐ Yes ■ No | ☐ The receiving water<br><br>☐ A surface water other than the receiving water; if so, indicate waterbody: | ☐ Potable water; if so, indicate municipality or origin:<br><br>☐ Other; if so, specify: |

| | |
|---|---|
| 2. Source water contaminants: Inorganics, Non-Halogenated VOCs | |
| 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):<br>001 | Outfall location(s): (Latitude, Longitude)<br>42.369145, -71.076297 |
| Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify:<br>Treated water will be discharged into a stromwater catch basin with a final outfall in the Lechmere Canal<br>☐ A private storm sewer system ■ A municipal storm sewer system<br>If the discharge enters the receiving water via a private or municipal storm sewer system:<br>Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No<br>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: notification and permission will be provided congruently with the submittal of this NOI<br>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): 10/20/20 10/20/21<br>Indicate if the discharge is expected to occur over a duration of: ■ less than 12 months ☐ 12 months or more ☐ is an emergency discharge | |
| Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No | |

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation<br>☐ II – Non-Petroleum-Related Site Remediation<br>■ III – Contaminated Site Dewatering<br>☐ IV – Dewatering of Pipelines and Tanks<br>☐ V – Aquifer Pump Testing<br>☐ VI – Well Development/Rehabilitation<br>☐ VII – Collection Structure Dewatering/Remediation<br>☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)<br><br>■ A. Inorganics<br>■ B. Non-Halogenated Volatile Organic Compounds<br>☐ C. Halogenated Volatile Organic Compounds<br>☐ D. Non-Halogenated Semi-Volatile Organic Compounds<br>☐ E. Halogenated Semi-Volatile Organic Compounds<br>☐ 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)<br><br>☐ A. Inorganics<br>☐ B. Non-Halogenated Volatile Organic Compounds<br>☐ C. Halogenated Volatile Organic Compounds<br>☐ D. Non-Halogenated Semi-Volatile Organic Compounds<br>☐ E. Halogenated Semi-Volatile Organic Compounds<br>☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

| Parameter | Known or believed absent | Known or believed present | # of samples | Test method (#) | Detection limit (µg/l) | Influent | | Effluent Limitations | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Daily maximum (µg/l) | Daily average (µg/l) | TBEL | WQBEL |
| **A. Inorganics** | | | | | | | | | |
| Ammonia | | ✔ | 2 | 350.1 | 100 | 600 | 410 | Report mg/L | --- |
| Chloride | | ✔ | 2 | 300.0 | 25 | 2800000 | 1555000 | Report µg/l | --- |
| Total Residual Chlorine | ✔ | | 2 | 4500 | 200 | <200 | <200 | 0.2 mg/L | 11 |
| Total Suspended Solids | | ✔ | 2 | 2540 | 1000 | 15000 | 11200 | 30 mg/L | --- |
| Antimony | ✔ | | 2 | 200.8 | 1.0 | <1.0 | <1.0 | 206 µg/L | |
| Arsenic | | ✔ | 2 | 200.8 | 0.80 | 23 | 11.5 | 104 µg/L | 10 |
| Cadmium | ✔ | | 2 | 200.8 | 0.20 | <0.20 | <0.20 | 10.2 µg/L | |
| Chromium III | | ✔ | 2 | 200.8 | 1.0 | 3.3 | 2.15 | 323 µg/L | |
| Chromium VI | ✔ | | 2 | 3500 | 4 | <4 | <4 | 323 µg/L | |
| Copper | | ✔ | 2 | 200.8 | 1.0 | 17 | 15.5 | 242 µg/L | |
| Iron | | ✔ | 2 | 200.7 | 50 | 300 | 250 | 5,000 µg/L | |
| Lead | | ✔ | 2 | 200.8 | 0.50 | 2.7 | 1.6 | 160 µg/L | |
| Mercury | ✔ | | 2 | 245.1 | 0.1 | <0.1 | <0.1 | 0.739 µg/L | |
| Nickel | ✔ | | 2 | 200.8 | 5 | <5 | <5 | 1,450 µg/L | |
| Selenium | | ✔ | 2 | 200.8 | 5 | 3.6 | 1.8 | 235.8 µg/L | 5 |
| Silver | ✔ | | 2 | 200.8 | 0.20 | <0.20 | <0.20 | 35.1 µg/L | |
| Zinc | | ✔ | 2 | 200.8 | 10 | 11 | 5.5 | 420 µg/L | |
| Cyanide | | | 2 | 4500 | 1 | 1 | .5 | 178 mg/L | |
| **B. Non-Halogenated VOCs** | | | | | | | | | |
| Total BTEX | | | | | | <100 | <100 | 100 µg/L | --- |
| Benzene | ✔ | | 2 | 624.1 | 0.18 | <0.18 | <0.18 | 5.0 µg/L | --- |
| 1,4 Dioxane | ✔ | | 2 | 624.1 | 22.5 | <22.5 | <22.5 | 200 µg/L | --- |
| Acetone | | ✔ | 2 | 624.1 | 3.79 | 50.9 | 25.45 | 7.97 mg/L | --- |
| Phenol | ✔ | | 2 | 624.1 | 9.9 | <9.9 | <9.9 | 1,080 µg/L | |

| Parameter | Known or believed absent | Known or believed present | # of samples | Test method (#) | Detection limit (µg/l) | Influent | | Effluent Limitations | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Daily maximum (µg/l) | Daily average (µg/l) | TBEL | WQBEL |
| **C. Halogenated VOCs** | | | | | | | | | |
| Carbon Tetrachloride | ✔ | | 2 | 624.1 | 0.110 | <0.110 | <0.110 | 4.4 µg/L | |
| 1,2 Dichlorobenzene | ✔ | | 2 | 624.1 | 0.160 | <0.160 | <0.160 | 600 µg/L | --- |
| 1,3 Dichlorobenzene | ✔ | | 2 | 624.1 | 0.120 | <0.120 | <0.120 | 320 µg/L | --- |
| 1,4 Dichlorobenzene | ✔ | | 2 | 624.1 | 0.130 | <0.130 | <0.130 | 5.0 µg/L | --- |
| Total dichlorobenzene | | | 2 | | | | | 763 µg/L in NH | --- |
| 1,1 Dichloroethane | ✔ | | 2 | 624.1 | 0.160 | <0.160 | <0.160 | 70 µg/L | --- |
| 1,2 Dichloroethane | ✔ | | 2 | 624.1 | 0.410 | <0.410 | <0.410 | 5.0 µg/L | --- |
| 1,1 Dichloroethylene | ✔ | | 2 | 624.1 | 0.320 | <0.320 | <0.320 | 3.2 µg/L | --- |
| Ethylene Dibromide | ✔ | | 2 | 504.1 | 0.020 | <0.020 | <0.020 | 0.05 µg/L | --- |
| Methylene Chloride | ✔ | | 2 | 624.1 | 0.340 | <0.340 | <0.340 | 4.6 µg/L | --- |
| 1,1,1 Trichloroethane | ✔ | | 2 | 624.1 | 0.200 | <0.200 | <0.200 | 200 µg/L | --- |
| 1,1,2 Trichloroethane | ✔ | | 2 | 624.1 | 0.160 | <0.160 | <0.160 | 5.0 µg/L | --- |
| Trichloroethylene | ✔ | | 2 | 624.1 | 0.240 | <0.240 | <0.240 | 5.0 µg/L | --- |
| Tetrachloroethylene | | ✔ | 2 | 624.1 | 0.180 | 0.250 | 0.250 | 5.0 µg/L | |
| cis-1,2 Dichloroethylene | ✔ | | 2 | 624.1 | 0.130 | <0.130 | <0.013 | 70 µg/L | --- |
| Vinyl Chloride | ✔ | | 2 | 624.1 | 0.450 | <0.450 | <0.450 | 2.0 µg/L | --- |
| **D. Non-Halogenated SVOCs** | | | | | | | | | |
| Total Phthalates | ✔ | | 2 | 625.1 | | <190 | <190 | 190 µg/L | |
| Diethylhexyl phthalate | ✔ | | 2 | 625.1 | 9.90 | <9.90 | <9.90 | 101 µg/L | |
| Total Group I PAHs | ✔ | | | 625.1 | | <1 | <1 | 1.0 µg/L | --- |
| Benzo(a)anthracene | ✔ | | 2 | 625.1 | 0.016 | <0.016 | <0.016 | As Total PAHs | |
| Benzo(a)pyrene | ✔ | | 2 | 625.1 | 0.012 | <0.012 | <0.012 | | |
| Benzo(b)fluoranthene | ✔ | | 2 | 625.1 | 0.015 | <0.015 | <0.015 | | |
| Benzo(k)fluoranthene | ✔ | | 2 | 625.1 | 0.012 | <0.012 | <0.012 | | |
| Chrysene | ✔ | | 2 | 625.1 | 0.015 | <0.015 | <0.015 | | |
| Dibenzo(a,h)anthracene | ✔ | | 2 | 625.1 | 0.017 | <0.017 | <0.017 | | |
| Indeno(1,2,3-cd)pyrene | ✔ | | 2 | 625.1 | 0.018 | <0.018 | <0.018 | | |

| 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 | ✔ | | | | | <100 | <100 | 100 µg/L | --- |
| Naphthalene | ✔ | | 2 | 625.1 | 4.95 | <4.95 | <4.95 | 20 µg/L | --- |
| **E. Halogenated SVOCs** | | | | | | | | | |
| Total PCBs | ✔ | | 2 | 608.3 | | <0.000064 | <0.000064 | 0.000064 µg/L | --- |
| Pentachlorophenol | ✔ | | 2 | 625.1 | 0.33 | <0.33 | <0.33 | 1.0 µg/L | --- |
| **F. Fuels Parameters** | | | | | | | | | |
| Total Petroleum Hydrocarbons | ✔ | | 2 | 1664 | 1.4 | <1.4 | <1.4 | 5.0 mg/L | --- |
| Ethanol | ✔ | | 2 | 624.1 | 10.5 | <10.5 | <10.5 | Report mg/L | --- |
| Methyl-tert-Butyl Ether | ✔ | | 2 | 624.1 | 0.140 | <0.140 | <0.140 | 70 µg/L | |
| tert-Butyl Alcohol | ✔ | | 2 | 624.1 | 4.17 | <4.17 | <4.17 | 120 µg/L in MA<br>40 µg/L in NH | --- |
| tert-Amyl Methyl Ether | ✔ | | 2 | 624.1 | 0.250 | <0.250 | <0.250 | 90 µg/L in MA<br>140 µg/L in NH | --- |
| **Other (i.e., pH, temperature, hardness, salinity, $LC_{50}$, additional pollutants present); if so, specify:** | | | | | | | | | |
| pH MW | | | | Field | | 7.8 | | | |
| Hardness MW | | | | 200.7 | 1.4 | 200 | | | |
| pH Under-drain | | | | Field | | 6.9 | | | |
| Hardness Under-drain | | | | 200.7 | 14 | 2100 | | | |
| Chromium | | | | 200.8 | 1 | 1 | 1 | | |
| Copper | | | | 200.8 | 1 | 14 | 14 | | |
| Iron | | | | 200.7 | 50 | 200 | 200 | | |
| Lead | | | | 200.8 | 0.50 | 0.62 | 0.62 | | |
| Zinc | | | | 200.8 | 10 | 11 | 11 | | |
| Hardness | | | | 200.7 | 1.4 | 7.5 | 7.5 | | |
| pH | | | | Field | | 7.2 | | | |
| | | | | | | | | | |
| | | | | | | | | | |

## E. Treatment system information

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

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

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

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

Source water from construction dewatering will be split into two 21,000 gallon frac tanks at the head of the system. Chemical aided settling chemicals LRT E50 coagulant and LRT 823 Flocculant will be added to the water in the frac tanks. From the frac tanks water will pass through two 18,000 gallon weir tanks plumbed in parallel for primary settling. Water will then be pumped to a multi bag filter skid (with two, six bag filter housings). If required water will split into two treatment trains following the bag filters each trains will consist of the following. Two carbon vessels plumbed in parallel each carbon vessel will contain 3,000 pounds of reactivated liquid-phase carbon, followed by one cation media vessel and then one

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

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

■ Chemical feed tank ☐ Air stripping unit ■ Bag filter ☐ Other; if so, specify:

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

☐ Chlorination ☐ De-chlorination

| | |
|---|---|
| 3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component.<br>Indicate the most limiting component: Bag filters<br>Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification: | 300 |
| Provide the proposed maximum effluent flow in gpm. | 300 |
| Provide the average effluent flow in gpm. | 150 |
| If Activity Category IV applies, indicate the estimated total volume of water that will be discharged: | |

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

## F. Chemical and additive information

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

☐ Algaecides/biocides ☐ Antifoams ■ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ☐ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ■ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:

2. Provide the following information for each chemical/additive, using attachments, if necessary:
LRT E50 Coagulant and LRT 823 Polymer to aid in settling of sediment and drilling residuals added as needed low doses 24/7. 50 to 93% Sulfuric acid to lower pH
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

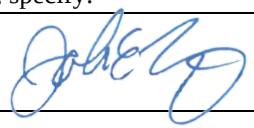
## I. Supplemental information

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

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 ☐<br>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: 9/28/20 |
| Print Name and Title: John E. Twohig, Hereunto Duly Authorized |

| | |
|---|---|
| (Flow Regime Modification*) | |
| Cause Unknown (Sediment Screening Value (Exceedence)) | |
| Chlorophyll-a | 33826 |
| Combined Biota/Habitat Bioassessments | |
| DDT in Fish Tissue | |
| Dissolved Oxygen | |
| Dissolved Oxygen Supersaturation | 33826 |
| Escherichia Coli (E. Coli) | 32371 |
| Harmful Algal Blooms | 33826 |
| Nutrient/Eutrophication Biological Indicators | 33826 |
| Odor | 33826 |
| Oil and Grease | |
| PCBs In Fish Tissue | |
| Phosphorus, Total | 33826 |
| Salinity | |
| Temperature | |
| Transparency / Clarity | 33826 |


# MA Limits

# WQBEL

**Enter number values in green boxes below**

Enter values in the units specified

↓

| | |
|---|---|
| 0 | $Q_R$ = Enter upstream flow in **MGD** |
| 0.432 | $Q_P$ = Enter discharge flow in **MGD** |
| 0 | Downstream 7Q10 |

Enter a dilution factor, if other than zero

↓

| |
|---|
| 0 |

Enter values in the units specified

↓

| | |
|---|---|
| 2100 | $C_d$ = Enter influent hardness in **mg/L** $CaCO_3$ |
| 61 | $C_s$ = Enter receiving water hardness in **mg/L** $CaCO_3$ |

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

↓

| | |
|---|---|
| 7.1 | pH in **Standard Units** |
| 18 | Temperature in **$^oC$** |
| 0.206 | Ammonia in **mg/L** |
| 7.5 | Hardness in **mg/L** $CaCO_3$ |
| 0 | Salinity in **ppt** |
| 0 | Antimony in **µg/L** |
| 0 | Arsenic in **µg/L** |
| 0 | Cadmium in **µg/L** |
| 1 | Chromium III in **µg/L** |
| 0 | Chromium VI in **µg/L** |
| 14 | Copper in **µg/L** |
| 200 | Iron in **µg/L** |
| 0.62 | Lead in **µg/L** |
| 0 | Mercury in **µg/L** |
| 0 | Nickel in **µg/L** |
| 0 | Selenium in **µg/L** |
| 0 | Silver in **µg/L** |
| 11 | Zinc in **µg/L** |

Enter **influent** concentrations in the units specified

↓

| | |
|---|---|
| 0 | TRC in **µg/L** |
| 0.6 | Ammonia in **mg/L** |
| 0 | Antimony in **µg/L** |
| 23 | Arsenic in **µg/L** |
| 0 | Cadmium in **µg/L** |
| 3.3 | Chromium III in **µg/L** |
| 0 | Chromium VI in **µg/L** |
| 36 | Copper in **µg/L** |
| 420 | Iron in **µg/L** |
| 2.7 | Lead in **µg/L** |
| 0 | Mercury in **µg/L** |
| 8.5 | Nickel in **µg/L** |
| 75 | Selenium in **µg/L** |
| 0 | Silver in **µg/L** |
| 18 | Zinc in **µg/L** |
| 1 | Cyanide in **µg/L** |
| 0 | Phenol in **µg/L** |
| 0 | Carbon Tetrachloride in **µg/L** |
| 0 | Tetrachloroethylene in **µg/L** |
| 0 | Total Phthalates in **µg/L** |
| 0 | Diethylhexylphthalate in **µg/L** |
| 0 | Benzo(a)anthracene in **µg/L** |
| 0 | Benzo(a)pyrene in **µg/L** |
| 0 | Benzo(b)fluoranthene in **µg/L** |
| 0 | Benzo(k)fluoranthene in **µg/L** |
| 0 | Chrysene in **µg/L** |
| 0 | Dibenzo(a,h)anthracene in **µg/L** |
| 0 | Indeno(1,2,3-cd)pyrene in **µg/L** |
| 0 | Methyl-tert butyl ether in **µg/L** |

| | | | | |
|---|---|---|---|---|
| **Dilution Factor** | 1.0 | | | |
| **A. Inorganics** | TBEL applies if bolded | | WQBEL applies if bolded | |
| Ammonia | **Report** | mg/L | --- | |
| Chloride | **Report** | µg/L | --- | |
| Total Residual Chlorine | 0.2 | mg/L | **11** | µg/L |
| Total Suspended Solids | **30** | mg/L | --- | |
| Antimony | **206** | µg/L | 640 | µg/L |
| Arsenic | 104 | µg/L | **10** | µg/L |
| Cadmium | **10.2** | µg/L | 2.5822 | µg/L |
| Chromium III | **323** | µg/L | 1043.0 | µg/L |
| Chromium VI | **323** | µg/L | 11.4 | µg/L |
| Copper | **242** | µg/L | 125.8 | µg/L |
| Iron | **5000** | µg/L | 1000 | µg/L |
| Lead | **160** | µg/L | 153.40 | µg/L |
| Mercury | **0.739** | µg/L | 0.91 | µg/L |
| Nickel | **1450** | µg/L | 685.4 | µg/L |
| Selenium | 235.8 | µg/L | **5.0** | µg/L |
| Silver | **35.1** | µg/L | 711.6 | µg/L |
| Zinc | **420** | µg/L | 1580.6 | 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 | 300 | µg/L |
| **C. Halogenated VOCs** | | | | |
| Carbon Tetrachloride | **4.4** | µg/L | 1.6 | µg/L |
| 1,2 Dichlorobenzene | **600** | µg/L | --- | |
| 1,3 Dichlorobenzene | **320** | µg/L | --- | |
| 1,4 Dichlorobenzene | **5.0** | µg/L | --- | |
| Total dichlorobenzene | **---** | µg/L | --- | |
| 1,1 Dichloroethane | **70** | µg/L | --- | |
| 1,2 Dichloroethane | **5.0** | µg/L | --- | |
| 1,1 Dichloroethylene | **3.2** | µg/L | --- | |
| Ethylene Dibromide | **0.05** | µg/L | --- | |
| Methylene Chloride | **4.6** | µg/L | --- | |
| 1,1,1 Trichloroethane | **200** | µg/L | --- | |
| 1,1,2 Trichloroethane | **5.0** | µg/L | --- | |
| Trichloroethylene | **5.0** | µg/L | --- | |
| Tetrachloroethylene | **5.0** | µg/L | 3.3 | µg/L |
| cis-1,2 Dichloroethylene | **70** | µg/L | --- | |

| | | | | |
|---|---|---|---|---|
| Vinyl Chloride | **2.0** | µg/L | --- | |
| **D. Non-Halogenated SVOCs** | | | | |
| Total Phthalates | **190** | µg/L | --- | µg/L |
| Diethylhexyl phthalate | **101** | µg/L | 2.2 | µg/L |
| Total Group I Polycyclic Aromatic Hydrocarbons | **1.0** | µg/L | --- | |
| Benzo(a)anthracene | **1.0** | µg/L | 0.0038 | µg/L |
| 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 | --- | |

# Appendix B

# Laboratory Data

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

September 24, 2020

Jake Jennings
Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453

Project Location: 100 Cambridgeside Place
Client Job Number:
Project Number: 2-2085
Laboratory Work Order Number: 20I0672

Enclosed are results of analyses for samples received by the laboratory on September 11, 2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

# Table of Contents

# Table of Contents (continued)

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

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA 01453
ATTN: Jake Jennings

REPORT DATE: 9/24/2020

PURCHASE ORDER NUMBER: 2-2085

PROJECT NUMBER: 2-2085

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 20I0672

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

PROJECT LOCATION: 100 Cambridgeside Place

| FIELD SAMPLE # | LAB ID: | MATRIX | SAMPLE DESCRIPTION | TEST | SUB LAB |
|---|---|---|---|---|---|
| MW | 20I0672-01 | Ground Water | | 608.3 | |
| | | | | 624.1 | |
| | | | | 625.1 | |
| | | | | EPA 1664B | |
| | | | | EPA 200.7 | |
| | | | | EPA 200.8 | |
| | | | | EPA 245.1 | |
| | | | | EPA 300.0 | |
| | | | | EPA 350.1 | |
| | | | | EPA 504.1 | |
| | | | | SM21-22 2540D | |
| | | | | SM21-22 3500 Cr B | |
| | | | | SM21-22 4500 CL G | |
| | | | | SM21-22 4500 CN E | MA M-MA-086/CT PH-0574/NY11148 |
| | | | | Tri Chrome Calc. | |
| Under Drain System | 20I0672-02 | Ground Water | | 608.3 | |
| | | | | 624.1 | |
| | | | | 625.1 | |
| | | | | EPA 1664B | |
| | | | | EPA 200.7 | |
| | | | | EPA 200.8 | |
| | | | | EPA 245.1 | |
| | | | | EPA 300.0 | |
| | | | | EPA 350.1 | |
| | | | | EPA 504.1 | |
| | | | | SM21-22 2540D | |
| | | | | SM21-22 3500 Cr B | |
| | | | | SM21-22 4500 CL G | |
| | | | | SM21-22 4500 CN E | MA M-MA-086/CT PH-0574/NY11148 |
| | | | | Tri Chrome Calc. | |
| Receiving Water | 20I0672-03 | Ground Water | | EPA 200.7 | |
| | | | | EPA 200.8 | |
| | | | | EPA 245.1 | |
| | | | | EPA 350.1 | |
| | | | | SM21-22 3500 Cr B | |
| | | | | Tri Chrome Calc. | |

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

**CASE NARRATIVE SUMMARY**

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

REVISED REPORT - 9/24/2020 - Project name updated per client's request.

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

**625.1**

**Qualifications:**

**L-04**

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side.

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

**Hexachlorocyclopentadiene**
S052469-CCV1

**V-04**

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

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

**Benzidine**
S052469-CCV1, S052471-CCV1

**V-05**

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

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

**Benzidine**
S052469-CCV1, S052471-CCV1

**Hexachlorocyclopentadiene**
S052469-CCV1, S052471-CCV1

**EPA 200.8**

**Qualifications:**

**DL-15**

Sample required a dilution due to low internal standard recovery of the lesser diluted digestion, reporting limit is elevated.

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

**Antimony**
20I0672-02[Under Drain System]

**Cadmium**
20I0672-02[Under Drain System]

**Chromium**
20I0672-02[Under Drain System]

**Lead**
20I0672-02[Under Drain System]

**Nickel**
20I0672-02[Under Drain System]

**Silver**
20I0672-02[Under Drain System]

**SM21-22 4500 CL G**

**Qualifications:**

**Z-01**

SM 4500 CL G test had a calibration point outside of acceptable back-calculated recovery. Re-analysis yielded similar non-conformance.

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

**Chlorine, Residual**
20I0672-01[MW], 20I0672-02[Under Drain System], B266332-BLK1, B266332-BS1, B266332-BSD1

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Kerry K. McGee
Project Manager

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Volatile Organic Compounds by GC/MS**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Acetone | 50.9 | 50.0 | 3.79 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| tert-Amyl Methyl Ether (TAME) | <0.140 | 0.500 | 0.140 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Benzene | <0.180 | 1.00 | 0.180 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Bromodichloromethane | 1.59 | 2.00 | 0.160 | µg/L | 1 | J | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Bromoform | <0.460 | 2.00 | 0.460 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Bromomethane | <1.38 | 5.00 | 1.38 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| tert-Butyl Alcohol (TBA) | <4.17 | 20.0 | 4.17 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Carbon Tetrachloride | <0.110 | 2.00 | 0.110 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Chlorobenzene | <0.150 | 2.00 | 0.150 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Chlorodibromomethane | 1.61 | 2.00 | 0.210 | µg/L | 1 | J | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Chloroethane | <0.360 | 2.00 | 0.360 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Chloroform | 5.87 | 2.00 | 0.170 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Chloromethane | <0.450 | 2.00 | 0.450 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,2-Dichlorobenzene | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,3-Dichlorobenzene | <0.120 | 2.00 | 0.120 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,4-Dichlorobenzene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,2-Dichloroethane | <0.410 | 2.00 | 0.410 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| cis-1,2-Dichloroethylene | <0.130 | 1.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,1-Dichloroethane | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,1-Dichloroethylene | <0.320 | 2.00 | 0.320 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| trans-1,2-Dichloroethylene | <0.310 | 2.00 | 0.310 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,2-Dichloropropane | <0.200 | 2.00 | 0.200 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| cis-1,3-Dichloropropene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,4-Dioxane | <22.5 | 50.0 | 22.5 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| trans-1,3-Dichloropropene | <0.230 | 2.00 | 0.230 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Ethanol | <10.5 | 50.0 | 10.5 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Ethylbenzene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Methyl tert-Butyl Ether (MTBE) | <0.250 | 2.00 | 0.250 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Methylene Chloride | <0.340 | 5.00 | 0.340 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,1,2,2-Tetrachloroethane | <0.220 | 2.00 | 0.220 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Tetrachloroethylene | 0.250 | 2.00 | 0.180 | µg/L | 1 | J | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Toluene | 2.06 | 1.00 | 0.140 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,1,1-Trichloroethane | <0.200 | 2.00 | 0.200 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| 1,1,2-Trichloroethane | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Trichloroethylene | <0.240 | 2.00 | 0.240 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Trichlorofluoromethane (Freon 11) | <0.330 | 2.00 | 0.330 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| Vinyl Chloride | <0.450 | 2.00 | 0.450 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| m+p Xylene | 0.310 | 2.00 | 0.300 | µg/L | 1 | J | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |
| o-Xylene | <0.170 | 1.00 | 0.170 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 1:11 | LBD |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 76.4 | 70-130 | | 9/15/20 1:11 |
| Toluene-d8 | 92.9 | 70-130 | | 9/15/20 1:11 |
| 4-Bromofluorobenzene | 96.5 | 70-130 | | 9/15/20 1:11 |

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Semivolatile Organic Compounds by GC/MS**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene (SIM) | <0.016 | 0.050 | 0.016 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Benzo(a)pyrene (SIM) | <0.012 | 0.099 | 0.012 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Benzo(b)fluoranthene (SIM) | <0.015 | 0.050 | 0.015 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Benzo(k)fluoranthene (SIM) | <0.012 | 0.20 | 0.012 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Bis(2-ethylhexyl)phthalate (SIM) | <0.42 | 0.99 | 0.42 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Chrysene (SIM) | <0.015 | 0.20 | 0.015 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Dibenz(a,h)anthracene (SIM) | <0.017 | 0.099 | 0.017 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Indeno(1,2,3-cd)pyrene (SIM) | <0.018 | 0.099 | 0.018 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |
| Pentachlorophenol (SIM) | <0.33 | 0.99 | 0.33 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:23 | imr |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 2-Fluorophenol (SIM) | 42.8 | 15-110 | | 9/17/20 10:23 |
| Phenol-d6 (SIM) | 28.9 | 15-110 | | 9/17/20 10:23 |
| Nitrobenzene-d5 | 64.3 | 30-130 | | 9/17/20 10:23 |
| 2-Fluorobiphenyl | 54.6 | 30-130 | | 9/17/20 10:23 |
| 2,4,6-Tribromophenol (SIM) | 72.7 | 15-110 | | 9/17/20 10:23 |
| p-Terphenyl-d14 | 55.3 | 30-130 | | 9/17/20 10:23 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Semivolatile Organic Compounds by - GC/MS**

| Analyte | Results | RL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Acenaphthylene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Anthracene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Benzo(g,h,i)perylene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Butylbenzylphthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 4-Chloro-3-methylphenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2-Chlorophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Di-n-butylphthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2,4-Dichlorophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Diethylphthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2,4-Dimethylphenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Dimethylphthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 4,6-Dinitro-2-methylphenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2,4-Dinitrophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Di-n-octylphthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Bis(2-Ethylhexyl)phthalate | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Fluoranthene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Fluorene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Naphthalene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2-Nitrophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 4-Nitrophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Pentachlorophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Phenanthrene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2-Methylphenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Phenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 3/4-Methylphenol | <19.8 | 19.8 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| Pyrene | <4.95 | 4.95 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |
| 2,4,6-Trichlorophenol | <9.90 | 9.90 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 12:04 | IMR |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 2-Fluorophenol | 37.4 | 15-110 | | 9/17/20 12:04 |
| Phenol-d6 | 24.0 | 15-110 | | 9/17/20 12:04 |
| Nitrobenzene-d5 | 56.5 | 30-130 | | 9/17/20 12:04 |
| 2-Fluorobiphenyl | 65.4 | 30-130 | | 9/17/20 12:04 |
| 2,4,6-Tribromophenol | 69.0 | 15-110 | | 9/17/20 12:04 |
| p-Terphenyl-d14 | 70.7 | 30-130 | | 9/17/20 12:04 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Polychlorinated Biphenyls By GC/ECD**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 [1] | <0.0920 | 0.100 | 0.0920 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1221 [1] | <0.0805 | 0.100 | 0.0805 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1232 [1] | <0.0995 | 0.100 | 0.0995 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1242 [1] | <0.0865 | 0.100 | 0.0865 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1248 [1] | <0.0950 | 0.100 | 0.0950 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1254 [1] | <0.0525 | 0.100 | 0.0525 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |
| Aroclor-1260 [1] | <0.0980 | 0.100 | 0.0980 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:18 | PJG |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| Decachlorobiphenyl [1] | 96.7 | 30-150 | | 9/17/20 21:18 |
| Decachlorobiphenyl [2] | 96.4 | 30-150 | | 9/17/20 21:18 |
| Tetrachloro-m-xylene [1] | 85.1 | 30-150 | | 9/17/20 21:18 |
| Tetrachloro-m-xylene [2] | 86.2 | 30-150 | | 9/17/20 21:18 |

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Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Metals Analyses (Total)**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Arsenic | ND | 0.80 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Cadmium | ND | 0.20 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Chromium | 3.3 | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Chromium, Trivalent | 0.0033 | | | mg/L | 1 | | Tri Chrome Calc. | 9/14/20 | 9/15/20 15:35 | QNW |
| Copper | 17 | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Iron | 0.30 | 0.050 | | mg/L | 1 | | EPA 200.7 | 9/14/20 | 9/15/20 16:57 | MJH |
| Lead | 2.7 | 0.50 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Mercury | ND | 0.00010 | | mg/L | 1 | | EPA 245.1 | 9/14/20 | 9/16/20 11:22 | CJV |
| Nickel | ND | 5.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Selenium | 3.6 | 5.0 | 1.6 | µg/L | 1 | J | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Silver | ND | 0.20 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Zinc | ND | 10 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:35 | QNW |
| Hardness | 200 | 1.4 | | mg/L | 1 | | EPA 200.7 | 9/14/20 | 9/15/20 16:57 | MJH |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

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

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.60 | 0.10 | | mg/L | 1 | | EPA 350.1 | 9/13/20 | 9/16/20 11:31 | MMH |
| Chloride | 310 | 25 | | mg/L | 25 | | EPA 300.0 | 9/15/20 | 9/15/20 19:52 | EC |
| Chlorine, Residual | ND | 0.020 | | mg/L | 1 | Z-01 | SM21-22 4500 CL G | 9/11/20 | 9/11/20 21:15 | AWA |
| Hexavalent Chromium | ND | 0.0040 | | mg/L | 1 | | SM21-22 3500 Cr B | 9/11/20 | 9/11/20 20:00 | CB2 |
| Total Suspended Solids | 15 | 1.0 | | mg/L | 1 | | SM21-22 2540D | 9/14/20 | 9/14/20 12:49 | LL |
| Silica Gel Treated HEM (SGT-HEM) | ND | 1.4 | | mg/L | 1 | | EPA 1664B | 9/17/20 | 9/17/20 11:30 | LL |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

**Drinking Water Organics EPA 504.1**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromoethane (EDB) (1) | ND | 0.020 | 0.012 | µg/L | 1 | | EPA 504.1 | 9/17/20 | 9/17/20 15:38 | PJG |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 1,3-Dibromopropane (1) | 100 | 70-130 | | 9/17/20 15:38 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: MW** | Sampled: 9/11/2020 10:00

**Sample ID: 20I0672-01**

Sample Matrix: Ground Water

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

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Cyanide | ND | 0.005 | 0.001 | mg/L | 1 | | SM21-22 4500 CN E | | 9/15/20 14:57 | AAL |

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Volatile Organic Compounds by GC/MS**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Acetone | <3.79 | 50.0 | 3.79 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| tert-Amyl Methyl Ether (TAME) | <0.140 | 0.500 | 0.140 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Benzene | <0.180 | 1.00 | 0.180 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Bromodichloromethane | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Bromoform | <0.460 | 2.00 | 0.460 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Bromomethane | <1.38 | 5.00 | 1.38 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| tert-Butyl Alcohol (TBA) | <4.17 | 20.0 | 4.17 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Carbon Tetrachloride | <0.110 | 2.00 | 0.110 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Chlorobenzene | <0.150 | 2.00 | 0.150 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Chlorodibromomethane | <0.210 | 2.00 | 0.210 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Chloroethane | <0.360 | 2.00 | 0.360 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Chloroform | <0.170 | 2.00 | 0.170 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Chloromethane | <0.450 | 2.00 | 0.450 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,2-Dichlorobenzene | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,3-Dichlorobenzene | <0.120 | 2.00 | 0.120 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,4-Dichlorobenzene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,2-Dichloroethane | <0.410 | 2.00 | 0.410 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| cis-1,2-Dichloroethylene | <0.130 | 1.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,1-Dichloroethane | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,1-Dichloroethylene | <0.320 | 2.00 | 0.320 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| trans-1,2-Dichloroethylene | <0.310 | 2.00 | 0.310 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,2-Dichloropropane | <0.200 | 2.00 | 0.200 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| cis-1,3-Dichloropropene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,4-Dioxane | <22.5 | 50.0 | 22.5 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| trans-1,3-Dichloropropene | <0.230 | 2.00 | 0.230 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Ethanol | <10.5 | 50.0 | 10.5 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Ethylbenzene | <0.130 | 2.00 | 0.130 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Methyl tert-Butyl Ether (MTBE) | <0.250 | 2.00 | 0.250 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Methylene Chloride | <0.340 | 5.00 | 0.340 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,1,2,2-Tetrachloroethane | <0.220 | 2.00 | 0.220 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Tetrachloroethylene | <0.180 | 2.00 | 0.180 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Toluene | 0.250 | 1.00 | 0.140 | µg/L | 1 | J | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,1,1-Trichloroethane | <0.200 | 2.00 | 0.200 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| 1,1,2-Trichloroethane | <0.160 | 2.00 | 0.160 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Trichloroethylene | <0.240 | 2.00 | 0.240 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Trichlorofluoromethane (Freon 11) | <0.330 | 2.00 | 0.330 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| Vinyl Chloride | <0.450 | 2.00 | 0.450 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| m+p Xylene | <0.300 | 2.00 | 0.300 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |
| o-Xylene | <0.170 | 1.00 | 0.170 | µg/L | 1 | | 624.1 | 9/14/20 | 9/15/20 3:22 | LBD |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 77.1 | 70-130 | | 9/15/20 3:22 |
| Toluene-d8 | 93.4 | 70-130 | | 9/15/20 3:22 |
| 4-Bromofluorobenzene | 96.8 | 70-130 | | 9/15/20 3:22 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Semivolatile Organic Compounds by GC/MS**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene (SIM) | <0.015 | 0.048 | 0.015 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Benzo(a)pyrene (SIM) | <0.012 | 0.096 | 0.012 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Benzo(b)fluoranthene (SIM) | <0.014 | 0.048 | 0.014 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Benzo(k)fluoranthene (SIM) | <0.012 | 0.19 | 0.012 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Bis(2-ethylhexyl)phthalate (SIM) | <0.41 | 0.96 | 0.41 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Chrysene (SIM) | <0.014 | 0.19 | 0.014 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Dibenz(a,h)anthracene (SIM) | <0.016 | 0.096 | 0.016 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Indeno(1,2,3-cd)pyrene (SIM) | <0.017 | 0.096 | 0.017 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |
| Pentachlorophenol (SIM) | <0.32 | 0.96 | 0.32 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 10:51 | imr |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 2-Fluorophenol (SIM) | 47.4 | 15-110 | | 9/17/20 10:51 |
| Phenol-d6 (SIM) | 34.6 | 15-110 | | 9/17/20 10:51 |
| Nitrobenzene-d5 | 76.8 | 30-130 | | 9/17/20 10:51 |
| 2-Fluorobiphenyl | 64.6 | 30-130 | | 9/17/20 10:51 |
| 2,4,6-Tribromophenol (SIM) | 84.3 | 15-110 | | 9/17/20 10:51 |
| p-Terphenyl-d14 | 64.8 | 30-130 | | 9/17/20 10:51 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Semivolatile Organic Compounds by - GC/MS**

| Analyte | Results | RL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Acenaphthylene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Anthracene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Benzo(g,h,i)perylene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Butylbenzylphthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 4-Chloro-3-methylphenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2-Chlorophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Di-n-butylphthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2,4-Dichlorophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Diethylphthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2,4-Dimethylphenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Dimethylphthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 4,6-Dinitro-2-methylphenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2,4-Dinitrophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Di-n-octylphthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Bis(2-Ethylhexyl)phthalate | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Fluoranthene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Fluorene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Naphthalene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2-Nitrophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 4-Nitrophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Pentachlorophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Phenanthrene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2-Methylphenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Phenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 3/4-Methylphenol | <19.2 | 19.2 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| Pyrene | <4.81 | 4.81 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |
| 2,4,6-Trichlorophenol | <9.62 | 9.62 | µg/L | 1 | | 625.1 | 9/16/20 | 9/17/20 13:01 | IMR |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 2-Fluorophenol | 44.6 | 15-110 | | 9/17/20 13:01 |
| Phenol-d6 | 30.6 | 15-110 | | 9/17/20 13:01 |
| Nitrobenzene-d5 | 66.6 | 30-130 | | 9/17/20 13:01 |
| 2-Fluorobiphenyl | 75.9 | 30-130 | | 9/17/20 13:01 |
| 2,4,6-Tribromophenol | 84.9 | 15-110 | | 9/17/20 13:01 |
| p-Terphenyl-d14 | 87.2 | 30-130 | | 9/17/20 13:01 |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Polychlorinated Biphenyls By GC/ECD**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor-1016 [1] | <0.0902 | 0.0980 | 0.0902 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1221 [1] | <0.0789 | 0.0980 | 0.0789 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1232 [1] | <0.0975 | 0.0980 | 0.0975 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1242 [1] | <0.0848 | 0.0980 | 0.0848 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1248 [1] | <0.0931 | 0.0980 | 0.0931 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1254 [1] | <0.0515 | 0.0980 | 0.0515 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |
| Aroclor-1260 [1] | <0.0961 | 0.0980 | 0.0961 | µg/L | 1 | | 608.3 | 9/17/20 | 9/17/20 21:30 | PJG |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| Decachlorobiphenyl [1] | 99.6 | 30-150 | | 9/17/20 21:30 |
| Decachlorobiphenyl [2] | 99.8 | 30-150 | | 9/17/20 21:30 |
| Tetrachloro-m-xylene [1] | 93.6 | 30-150 | | 9/17/20 21:30 |
| Tetrachloro-m-xylene [2] | 95.4 | 30-150 | | 9/17/20 21:30 |

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Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Metals Analyses (Total)**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 5.0 | | µg/L | 5 | DL-15 | EPA 200.8 | 9/14/20 | 9/17/20 7:41 | QNW |
| Arsenic | 23 | 1.6 | | µg/L | 2 | | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Cadmium | ND | 0.40 | | µg/L | 2 | DL-15 | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Chromium | ND | 2.0 | | µg/L | 2 | DL-15 | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Chromium, Trivalent | ND | 2.0 | | mg/L | 1 | | Tri Chrome Calc. | 9/14/20 | 9/16/20 10:50 | QNW |
| Copper | 36 | 2.0 | | µg/L | 2 | | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Iron | 0.42 | 0.050 | | mg/L | 1 | | EPA 200.7 | 9/14/20 | 9/15/20 17:05 | MJH |
| Lead | ND | 2.5 | | µg/L | 5 | DL-15 | EPA 200.8 | 9/14/20 | 9/16/20 10:46 | QNW |
| Mercury | ND | 0.00010 | | mg/L | 1 | | EPA 245.1 | 9/14/20 | 9/16/20 11:23 | CJV |
| Nickel | ND | 10 | | µg/L | 2 | DL-15 | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Selenium | 75 | 10 | 3.3 | µg/L | 2 | | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Silver | ND | 0.40 | | µg/L | 2 | DL-15 | EPA 200.8 | 9/14/20 | 9/16/20 10:50 | QNW |
| Zinc | 18 | 10 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:45 | QNW |
| Hardness | 2100 | 14 | | mg/L | 10 | | EPA 200.7 | 9/14/20 | 9/17/20 11:59 | QNW |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

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

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | 0.22 | 0.10 | | mg/L | 1 | | EPA 350.1 | 9/13/20 | 9/16/20 11:32 | MMH |
| Chloride | 2800 | 200 | | mg/L | 200 | | EPA 300.0 | 9/16/20 | 9/16/20 18:35 | CB2 |
| Chlorine, Residual | ND | 0.020 | | mg/L | 1 | Z-01 | SM21-22 4500 CL G | 9/11/20 | 9/11/20 21:15 | AWA |
| Hexavalent Chromium | ND | 0.0040 | | mg/L | 1 | | SM21-22 3500 Cr B | 9/11/20 | 9/11/20 20:00 | CB2 |
| Total Suspended Solids | 7.4 | 1.0 | | mg/L | 1 | | SM21-22 2540D | 9/14/20 | 9/14/20 12:49 | LL |
| Silica Gel Treated HEM (SGT-HEM) | ND | 1.4 | | mg/L | 1 | | EPA 1664B | 9/17/20 | 9/17/20 11:30 | LL |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

**Drinking Water Organics EPA 504.1**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromoethane (EDB) (1) | ND | 0.020 | 0.012 | µg/L | 1 | | EPA 504.1 | 9/17/20 | 9/17/20 16:02 | PJG |

| Surrogates | % Recovery | Recovery Limits | Flag/Qual | |
|---|---|---|---|---|
| 1,3-Dibromopropane (1) | 96.8 | 70-130 | | 9/17/20 16:02 |

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Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Under Drain System** | Sampled: 9/11/2020 10:30

**Sample ID: 20I0672-02**

Sample Matrix: Ground Water

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

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Cyanide | 0.001 | 0.005 | 0.001 | mg/L | 1 | | SM21-22 4500 CN E | | 9/15/20 14:59 | AAL |

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Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Receiving Water** | Sampled: 9/11/2020 10:45

**Sample ID: 20I0672-03**

Sample Matrix: Ground Water

**Metals Analyses (Total)**

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Arsenic | ND | 0.80 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Cadmium | ND | 0.20 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Chromium | 1.0 | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Chromium, Trivalent | 0.0010 | | | mg/L | 1 | | Tri Chrome Calc. | 9/14/20 | 9/15/20 15:52 | QNW |
| Copper | 14 | 1.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Iron | 0.20 | 0.050 | | mg/L | 1 | | EPA 200.7 | 9/14/20 | 9/15/20 17:13 | MJH |
| Lead | 0.62 | 0.50 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Mercury | ND | 0.00010 | | mg/L | 1 | | EPA 245.1 | 9/14/20 | 9/16/20 11:25 | CJV |
| Nickel | ND | 5.0 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Selenium | ND | 5.0 | 1.6 | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Silver | ND | 0.20 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Zinc | 11 | 10 | | µg/L | 1 | | EPA 200.8 | 9/14/20 | 9/15/20 15:52 | QNW |
| Hardness | 7.5 | 1.4 | | mg/L | 1 | | EPA 200.7 | 9/14/20 | 9/15/20 17:13 | MJH |

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

Project Location: 100 Cambridgeside Place | Sample Description: | Work Order: 20I0672

Date Received: 9/11/2020

**Field Sample #: Receiving Water** | Sampled: 9/11/2020 10:45

**Sample ID: 20I0672-03**

Sample Matrix: Ground Water

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

| Analyte | Results | RL | DL | Units | Dilution | Flag/Qual | Method | Date Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as N | ND | 0.10 | | mg/L | 1 | | EPA 350.1 | 9/13/20 | 9/16/20 11:33 | MMH |
| Hexavalent Chromium | ND | 0.0040 | | mg/L | 1 | | SM21-22 3500 Cr B | 9/11/20 | 9/11/20 20:00 | CB2 |

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## Sample Extraction Data

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266707 | 1000 | 5.00 | 09/17/20 |
| 20I0672-02 [Under Drain System] | B266707 | 1020 | 5.00 | 09/17/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266407 | 5 | 5.00 | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266407 | 5 | 5.00 | 09/14/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266582 | 1010 | 1.00 | 09/16/20 |
| 20I0672-02 [Under Drain System] | B266582 | 1040 | 1.00 | 09/16/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266649 | 1010 | 1.00 | 09/16/20 |
| 20I0672-02 [Under Drain System] | B266649 | 1040 | 1.00 | 09/16/20 |

**EPA 1664B**

| Lab Number [Field ID] | Batch | Initial [mL] | Date |
|---|---|---|---|
| 20I0672-01 [MW] | B266673 | 1000 | 09/17/20 |
| 20I0672-02 [Under Drain System] | B266673 | 1000 | 09/17/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266418 | 50.0 | 50.0 | 09/14/20 |
| 20I0672-01 [MW] | B266418 | 50.0 | | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266418 | 50.0 | 50.0 | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266418 | 50.0 | | 09/14/20 |
| 20I0672-03 [Receiving Water] | B266418 | 50.0 | 50.0 | 09/14/20 |
| 20I0672-03 [Receiving Water] | B266418 | 50.0 | | 09/14/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266420 | 50.0 | 50.0 | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266420 | 50.0 | 50.0 | 09/14/20 |
| 20I0672-03 [Receiving Water] | B266420 | 50.0 | 50.0 | 09/14/20 |

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## Sample Extraction Data

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266384 | 6.00 | 6.00 | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266384 | 6.00 | 6.00 | 09/14/20 |
| 20I0672-03 [Receiving Water] | B266384 | 6.00 | 6.00 | 09/14/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266491 | 10.0 | 10.0 | 09/15/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-02 [Under Drain System] | B266666 | 10.0 | 10.0 | 09/16/20 |

**EPA 350.1**

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266356 | 50.0 | 50.0 | 09/13/20 |
| 20I0672-02 [Under Drain System] | B266356 | 50.0 | 50.0 | 09/13/20 |
| 20I0672-03 [Receiving Water] | B266356 | 50.0 | 50.0 | 09/13/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266706 | 34.2 | 35.0 | 09/17/20 |
| 20I0672-02 [Under Drain System] | B266706 | 35.0 | 35.0 | 09/17/20 |

**SM21-22 2540D**

| Lab Number [Field ID] | Batch | Initial [mL] | Date |
|---|---|---|---|
| 20I0672-01 [MW] | B266372 | 500 | 09/14/20 |

**SM21-22 2540D**

| Lab Number [Field ID] | Batch | Initial [mL] | Date |
|---|---|---|---|
| 20I0672-02 [Under Drain System] | B266422 | 500 | 09/14/20 |

**SM21-22 3500 Cr B**

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266331 | 50.0 | 50.0 | 09/11/20 |
| 20I0672-02 [Under Drain System] | B266331 | 50.0 | 50.0 | 09/11/20 |
| 20I0672-03 [Receiving Water] | B266331 | 50.0 | 50.0 | 09/11/20 |

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## Sample Extraction Data

**SM21-22 4500 CL G**

| Lab Number [Field ID] | Batch | Initial [mL] | Final [mL] | Date |
|---|---|---|---|---|
| 20I0672-01 [MW] | B266332 | 100 | 100 | 09/11/20 |
| 20I0672-02 [Under Drain System] | B266332 | 100 | 100 | 09/11/20 |

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

| Lab Number [Field ID] | Batch | Initial [mL] | Date |
|---|---|---|---|
| 20I0672-01 [MW] | B266420 | 50.0 | 09/14/20 |
| 20I0672-02 [Under Drain System] | B266420 | 50.0 | 09/14/20 |
| 20I0672-03 [Receiving Water] | B266420 | 50.0 | 09/14/20 |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266407 - SW-846 5030B** | | | | | | | | | | |
| **Blank (B266407-BLK1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Acetone | ND | 50.0 | µg/L | | | | | | | |
| tert-Amyl Methyl Ether (TAME) | ND | 0.500 | µg/L | | | | | | | |
| Benzene | ND | 1.00 | µg/L | | | | | | | |
| tert-Butyl Alcohol (TBA) | ND | 20.0 | µg/L | | | | | | | |
| Carbon Tetrachloride | ND | 2.00 | µg/L | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.00 | µg/L | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.00 | µg/L | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.00 | µg/L | | | | | | | |
| 1,2-Dichloroethane | ND | 2.00 | µg/L | | | | | | | |
| cis-1,2-Dichloroethylene | ND | 1.00 | µg/L | | | | | | | |
| 1,1-Dichloroethane | ND | 2.00 | µg/L | | | | | | | |
| 1,1-Dichloroethylene | ND | 2.00 | µg/L | | | | | | | |
| 1,4-Dioxane | ND | 50.0 | µg/L | | | | | | | |
| Ethanol | ND | 50.0 | µg/L | | | | | | | |
| Ethylbenzene | ND | 2.00 | µg/L | | | | | | | |
| Methyl tert-Butyl Ether (MTBE) | ND | 2.00 | µg/L | | | | | | | |
| Methylene Chloride | ND | 5.00 | µg/L | | | | | | | |
| Tetrachloroethylene | ND | 2.00 | µg/L | | | | | | | |
| Toluene | ND | 1.00 | µg/L | | | | | | | |
| 1,1,1-Trichloroethane | ND | 2.00 | µg/L | | | | | | | |
| 1,1,2-Trichloroethane | ND | 2.00 | µg/L | | | | | | | |
| Trichloroethylene | ND | 2.00 | µg/L | | | | | | | |
| Vinyl Chloride | ND | 2.00 | µg/L | | | | | | | |
| m+p Xylene | ND | 2.00 | µg/L | | | | | | | |
| o-Xylene | ND | 1.00 | µg/L | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | *19.6* | | µg/L | 25.0 | | 78.6 | 70-130 | | | |
| Surrogate: Toluene-d8 | *23.2* | | µg/L | 25.0 | | 93.0 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | *23.8* | | µg/L | 25.0 | | 95.4 | 70-130 | | | |
| **LCS (B266407-BS1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Acetone | 180 | 50.0 | µg/L | 200 | | 92.2 | 70-160 | | | † |
| tert-Amyl Methyl Ether (TAME) | 19 | 0.500 | µg/L | 20.0 | | 95.0 | 70-130 | | | |
| Benzene | 20 | 1.00 | µg/L | 20.0 | | 101 | 65-135 | | | |
| tert-Butyl Alcohol (TBA) | 210 | 20.0 | µg/L | 200 | | 104 | 40-160 | | | † |
| Carbon Tetrachloride | 18 | 2.00 | µg/L | 20.0 | | 89.2 | 70-130 | | | |
| 1,2-Dichlorobenzene | 20 | 2.00 | µg/L | 20.0 | | 102 | 65-135 | | | |
| 1,3-Dichlorobenzene | 21 | 2.00 | µg/L | 20.0 | | 103 | 70-130 | | | |
| 1,4-Dichlorobenzene | 20 | 2.00 | µg/L | 20.0 | | 99.4 | 65-135 | | | |
| 1,2-Dichloroethane | 17 | 2.00 | µg/L | 20.0 | | 84.0 | 70-130 | | | |
| cis-1,2-Dichloroethylene | 20 | 1.00 | µg/L | 20.0 | | 100 | 70-130 | | | |
| 1,1-Dichloroethane | 21 | 2.00 | µg/L | 20.0 | | 104 | 70-130 | | | |
| 1,1-Dichloroethylene | 19 | 2.00 | µg/L | 20.0 | | 96.0 | 50-150 | | | |
| 1,4-Dioxane | 210 | 50.0 | µg/L | 200 | | 103 | 40-130 | | | † |
| Ethanol | 190 | 50.0 | µg/L | 200 | | 96.3 | 40-160 | | | |
| Ethylbenzene | 21 | 2.00 | µg/L | 20.0 | | 104 | 60-140 | | | |
| Methyl tert-Butyl Ether (MTBE) | 19 | 2.00 | µg/L | 20.0 | | 94.9 | 70-130 | | | |
| Methylene Chloride | 20 | 5.00 | µg/L | 20.0 | | 101 | 60-140 | | | |
| Tetrachloroethylene | 21 | 2.00 | µg/L | 20.0 | | 106 | 70-130 | | | |
| Toluene | 20 | 1.00 | µg/L | 20.0 | | 98.2 | 70-130 | | | |
| 1,1,1-Trichloroethane | 19 | 2.00 | µg/L | 20.0 | | 95.0 | 70-130 | | | |
| 1,1,2-Trichloroethane | 20 | 2.00 | µg/L | 20.0 | | 102 | 70-130 | | | |
| Trichloroethylene | 20 | 2.00 | µg/L | 20.0 | | 101 | 65-135 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266407 - SW-846 5030B** | | | | | | | | | | |
| **LCS (B266407-BS1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Vinyl Chloride | 19 | 2.00 | µg/L | 20.0 | | 92.8 | 5-195 | | | |
| m+p Xylene | 41 | 2.00 | µg/L | 40.0 | | 103 | 70-130 | | | |
| o-Xylene | 21 | 1.00 | µg/L | 20.0 | | 103 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | *19.6* | | µg/L | 25.0 | | 78.2 | 70-130 | | | |
| Surrogate: Toluene-d8 | *23.7* | | µg/L | 25.0 | | 94.8 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | *24.0* | | µg/L | 25.0 | | 96.0 | 70-130 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266649 - SW-846 3510C** | | | | | | | | | | |
| **Blank (B266649-BLK1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Benzo(a)anthracene (SIM) | ND | 0.050 | µg/L | | | | | | | |
| Benzo(a)pyrene (SIM) | ND | 0.10 | µg/L | | | | | | | |
| Benzo(b)fluoranthene (SIM) | ND | 0.050 | µg/L | | | | | | | |
| Benzo(k)fluoranthene (SIM) | ND | 0.050 | µg/L | | | | | | | |
| Bis(2-ethylhexyl)phthalate (SIM) | ND | 1.0 | µg/L | | | | | | | |
| Chrysene (SIM) | ND | 0.050 | µg/L | | | | | | | |
| Dibenz(a,h)anthracene (SIM) | ND | 0.10 | µg/L | | | | | | | |
| Indeno(1,2,3-cd)pyrene (SIM) | ND | 0.10 | µg/L | | | | | | | |
| Pentachlorophenol (SIM) | ND | 1.0 | µg/L | | | | | | | |
| Surrogate: 2-Fluorophenol (SIM) | *88.9* | | µg/L | 200 | | 44.5 | 15-110 | | | |
| Surrogate: Phenol-d6 (SIM) | *59.7* | | µg/L | 200 | | 29.9 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *82.1* | | µg/L | 100 | | 82.1 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *73.3* | | µg/L | 100 | | 73.3 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol (SIM) | *191* | | µg/L | 200 | | 95.4 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *77.6* | | µg/L | 100 | | 77.6 | 30-130 | | | |
| **LCS (B266649-BS1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Benzo(a)anthracene (SIM) | 39.4 | 1.0 | µg/L | 50.0 | | 78.9 | 33-143 | | | |
| Benzo(a)pyrene (SIM) | 39.0 | 2.0 | µg/L | 50.0 | | 78.0 | 17-163 | | | |
| Benzo(b)fluoranthene (SIM) | 43.5 | 1.0 | µg/L | 50.0 | | 87.0 | 24-159 | | | |
| Benzo(k)fluoranthene (SIM) | 41.4 | 4.0 | µg/L | 50.0 | | 82.8 | 11-162 | | | |
| Bis(2-ethylhexyl)phthalate (SIM) | 41.6 | 20 | µg/L | 50.0 | | 83.2 | 8-158 | | | |
| Chrysene (SIM) | 40.4 | 4.0 | µg/L | 50.0 | | 80.8 | 17-168 | | | |
| Dibenz(a,h)anthracene (SIM) | 43.8 | 2.0 | µg/L | 50.0 | | 87.7 | 10-227 | | | |
| Indeno(1,2,3-cd)pyrene (SIM) | 43.5 | 2.0 | µg/L | 50.0 | | 87.0 | 10-171 | | | |
| Pentachlorophenol (SIM) | 39.3 | 20 | µg/L | 50.0 | | 78.7 | 14-176 | | | |
| Surrogate: 2-Fluorophenol (SIM) | *92.8* | | µg/L | 200 | | 46.4 | 15-110 | | | |
| Surrogate: Phenol-d6 (SIM) | *63.7* | | µg/L | 200 | | 31.9 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *71.6* | | µg/L | 100 | | 71.6 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *73.6* | | µg/L | 100 | | 73.6 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol (SIM) | *195* | | µg/L | 200 | | 97.5 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *67.5* | | µg/L | 100 | | 67.5 | 30-130 | | | |
| **LCS Dup (B266649-BSD1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Benzo(a)anthracene (SIM) | 40.5 | 1.0 | µg/L | 50.0 | | 80.9 | 33-143 | 2.55 | 53 | |
| Benzo(a)pyrene (SIM) | 40.1 | 2.0 | µg/L | 50.0 | | 80.1 | 17-163 | 2.63 | 72 | |
| Benzo(b)fluoranthene (SIM) | 44.5 | 1.0 | µg/L | 50.0 | | 89.1 | 24-159 | 2.32 | 71 | |
| Benzo(k)fluoranthene (SIM) | 42.1 | 4.0 | µg/L | 50.0 | | 84.2 | 11-162 | 1.68 | 63 | |
| Bis(2-ethylhexyl)phthalate (SIM) | 42.8 | 20 | µg/L | 50.0 | | 85.5 | 8-158 | 2.80 | 82 | |
| Chrysene (SIM) | 41.2 | 4.0 | µg/L | 50.0 | | 82.3 | 17-168 | 1.86 | 87 | |
| Dibenz(a,h)anthracene (SIM) | 44.7 | 2.0 | µg/L | 50.0 | | 89.4 | 10-227 | 1.99 | 126 | |
| Indeno(1,2,3-cd)pyrene (SIM) | 44.6 | 2.0 | µg/L | 50.0 | | 89.1 | 10-171 | 2.41 | 99 | |
| Pentachlorophenol (SIM) | 40.3 | 20 | µg/L | 50.0 | | 80.6 | 14-176 | 2.36 | 86 | |
| Surrogate: 2-Fluorophenol (SIM) | *105* | | µg/L | 200 | | 52.5 | 15-110 | | | |
| Surrogate: Phenol-d6 (SIM) | *71.8* | | µg/L | 200 | | 35.9 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *83.9* | | µg/L | 100 | | 83.9 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *78.1* | | µg/L | 100 | | 78.1 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol (SIM) | *201* | | µg/L | 200 | | 100 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *67.1* | | µg/L | 100 | | 67.1 | 30-130 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266582 - SW-846 3510C** | | | | | | | | | | |
| **Blank (B266582-BLK1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Acenaphthene | ND | 5.00 | µg/L | | | | | | | |
| Acenaphthylene | ND | 5.00 | µg/L | | | | | | | |
| Anthracene | ND | 5.00 | µg/L | | | | | | | |
| Benzo(g,h,i)perylene | ND | 5.00 | µg/L | | | | | | | |
| Butylbenzylphthalate | ND | 10.0 | µg/L | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 10.0 | µg/L | | | | | | | |
| 2-Chlorophenol | ND | 10.0 | µg/L | | | | | | | |
| Di-n-butylphthalate | ND | 10.0 | µg/L | | | | | | | |
| 2,4-Dichlorophenol | ND | 10.0 | µg/L | | | | | | | |
| Diethylphthalate | ND | 10.0 | µg/L | | | | | | | |
| 2,4-Dimethylphenol | ND | 10.0 | µg/L | | | | | | | |
| Dimethylphthalate | ND | 10.0 | µg/L | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 10.0 | µg/L | | | | | | | |
| 2,4-Dinitrophenol | ND | 10.0 | µg/L | | | | | | | |
| Di-n-octylphthalate | ND | 10.0 | µg/L | | | | | | | |
| Bis(2-Ethylhexyl)phthalate | ND | 10.0 | µg/L | | | | | | | |
| Fluoranthene | ND | 5.00 | µg/L | | | | | | | |
| Fluorene | ND | 5.00 | µg/L | | | | | | | |
| Naphthalene | ND | 5.00 | µg/L | | | | | | | |
| 2-Nitrophenol | ND | 10.0 | µg/L | | | | | | | |
| 4-Nitrophenol | ND | 10.0 | µg/L | | | | | | | |
| Pentachlorophenol | ND | 10.0 | µg/L | | | | | | | |
| Phenanthrene | ND | 5.00 | µg/L | | | | | | | |
| 2-Methylphenol | ND | 10.0 | µg/L | | | | | | | |
| Phenol | ND | 10.0 | µg/L | | | | | | | |
| 3/4-Methylphenol | ND | 20.0 | µg/L | | | | | | | |
| Pyrene | ND | 5.00 | µg/L | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10.0 | µg/L | | | | | | | |
| Surrogate: 2-Fluorophenol | *81.0* | | µg/L | 200 | | 40.5 | 15-110 | | | |
| Surrogate: Phenol-d6 | *53.0* | | µg/L | 200 | | 26.5 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *72.6* | | µg/L | 100 | | 72.6 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *79.2* | | µg/L | 100 | | 79.2 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol | *167* | | µg/L | 200 | | 83.4 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *89.0* | | µg/L | 100 | | 89.0 | 30-130 | | | |
| **LCS (B266582-BS1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Acenaphthene | 40.3 | 5.00 | µg/L | 50.0 | | 80.7 | 47-145 | | | |
| Acenaphthylene | 44.0 | 5.00 | µg/L | 50.0 | | 88.1 | 33-145 | | | |
| Anthracene | 46.1 | 5.00 | µg/L | 50.0 | | 92.3 | 27-133 | | | |
| Benzo(g,h,i)perylene | 42.1 | 5.00 | µg/L | 50.0 | | 84.2 | 10-219 | | | |
| Butylbenzylphthalate | 40.5 | 10.0 | µg/L | 50.0 | | 81.0 | 10-152 | | | |
| 4-Chloro-3-methylphenol | 41.5 | 10.0 | µg/L | 50.0 | | 83.1 | 22-147 | | | |
| 2-Chlorophenol | 35.3 | 10.0 | µg/L | 50.0 | | 70.6 | 23-134 | | | |
| Di-n-butylphthalate | 43.4 | 10.0 | µg/L | 50.0 | | 86.7 | 10-120 | | | |
| 2,4-Dichlorophenol | 42.5 | 10.0 | µg/L | 50.0 | | 85.0 | 39-135 | | | |
| Diethylphthalate | 42.7 | 10.0 | µg/L | 50.0 | | 85.4 | 10-120 | | | |
| 2,4-Dimethylphenol | 41.1 | 10.0 | µg/L | 50.0 | | 82.2 | 32-120 | | | |
| Dimethylphthalate | 45.2 | 10.0 | µg/L | 50.0 | | 90.4 | 10-120 | | | |
| 4,6-Dinitro-2-methylphenol | 32.4 | 10.0 | µg/L | 50.0 | | 64.7 | 10-181 | | | |
| 2,4-Dinitrophenol | 21.3 | 10.0 | µg/L | 50.0 | | 42.6 | 10-191 | | | |
| Di-n-octylphthalate | 38.2 | 10.0 | µg/L | 50.0 | | 76.3 | 4-146 | | | |
| Bis(2-Ethylhexyl)phthalate | 39.4 | 10.0 | µg/L | 50.0 | | 78.8 | 8-158 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266582 - SW-846 3510C** | | | | | | | | | | |
| **LCS (B266582-BS1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Fluoranthene | 48.0 | 5.00 | µg/L | 50.0 | | 96.1 | 26-137 | | | |
| Fluorene | 45.2 | 5.00 | µg/L | 50.0 | | 90.3 | 59-121 | | | |
| Naphthalene | 36.0 | 5.00 | µg/L | 50.0 | | 72.0 | 21-133 | | | |
| 2-Nitrophenol | 42.2 | 10.0 | µg/L | 50.0 | | 84.4 | 29-182 | | | |
| 4-Nitrophenol | 22.5 | 10.0 | µg/L | 50.0 | | 45.1 | 10-132 | | | |
| Pentachlorophenol | 26.8 | 10.0 | µg/L | 50.0 | | 53.6 | 14-176 | | | |
| Phenanthrene | 46.2 | 5.00 | µg/L | 50.0 | | 92.4 | 54-120 | | | |
| 2-Methylphenol | 33.4 | 10.0 | µg/L | 50.0 | | 66.7 | 40-140 | | | |
| Phenol | 17.6 | 10.0 | µg/L | 50.0 | | 35.1 | 5-120 | | | |
| 3/4-Methylphenol | 32.4 | 20.0 | µg/L | 50.0 | | 64.9 | 40-140 | | | |
| Pyrene | 43.4 | 5.00 | µg/L | 50.0 | | 86.8 | 52-120 | | | |
| 2,4,6-Trichlorophenol | 44.9 | 10.0 | µg/L | 50.0 | | 89.7 | 37-144 | | | |
| Surrogate: 2-Fluorophenol | *103* | | µg/L | 200 | | 51.6 | 15-110 | | | |
| Surrogate: Phenol-d6 | *68.5* | | µg/L | 200 | | 34.2 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *81.4* | | µg/L | 100 | | 81.4 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *96.1* | | µg/L | 100 | | 96.1 | 30-130 | | | |
| Surrogate: 2,4,6-Tribromophenol | *207* | | µg/L | 200 | | 104 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *105* | | µg/L | 100 | | 105 | 30-130 | | | |
| **LCS Dup (B266582-BSD1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Acenaphthene | 36.6 | 5.00 | µg/L | 50.0 | | 73.3 | 47-145 | 9.56 | 48 | |
| Acenaphthylene | 39.7 | 5.00 | µg/L | 50.0 | | 79.4 | 33-145 | 10.4 | 74 | |
| Anthracene | 41.3 | 5.00 | µg/L | 50.0 | | 82.6 | 27-133 | 11.0 | 66 | |
| Benzo(g,h,i)perylene | 38.4 | 5.00 | µg/L | 50.0 | | 76.9 | 10-219 | 9.11 | 97 | |
| Butylbenzylphthalate | 36.5 | 10.0 | µg/L | 50.0 | | 73.1 | 10-152 | 10.3 | 60 | |
| 4-Chloro-3-methylphenol | 39.7 | 10.0 | µg/L | 50.0 | | 79.5 | 22-147 | 4.43 | 73 | |
| 2-Chlorophenol | 35.1 | 10.0 | µg/L | 50.0 | | 70.1 | 23-134 | 0.625 | 61 | |
| Di-n-butylphthalate | 39.2 | 10.0 | µg/L | 50.0 | | 78.4 | 10-120 | 10.1 | 47 | |
| 2,4-Dichlorophenol | 39.3 | 10.0 | µg/L | 50.0 | | 78.6 | 39-135 | 7.82 | 50 | |
| Diethylphthalate | 38.4 | 10.0 | µg/L | 50.0 | | 76.8 | 10-120 | 10.6 | 100 | |
| 2,4-Dimethylphenol | 38.4 | 10.0 | µg/L | 50.0 | | 76.8 | 32-120 | 6.79 | 58 | |
| Dimethylphthalate | 40.7 | 10.0 | µg/L | 50.0 | | 81.3 | 10-120 | 10.6 | 183 | |
| 4,6-Dinitro-2-methylphenol | 29.4 | 10.0 | µg/L | 50.0 | | 58.9 | 10-181 | 9.51 | 203 | |
| 2,4-Dinitrophenol | 19.4 | 10.0 | µg/L | 50.0 | | 38.8 | 10-191 | 9.53 | 132 | |
| Di-n-octylphthalate | 35.1 | 10.0 | µg/L | 50.0 | | 70.2 | 4-146 | 8.38 | 69 | |
| Bis(2-Ethylhexyl)phthalate | 35.1 | 10.0 | µg/L | 50.0 | | 70.2 | 8-158 | 11.5 | 82 | |
| Fluoranthene | 43.3 | 5.00 | µg/L | 50.0 | | 86.7 | 26-137 | 10.3 | 66 | |
| Fluorene | 40.4 | 5.00 | µg/L | 50.0 | | 80.8 | 59-121 | 11.1 | 38 | |
| Naphthalene | 33.6 | 5.00 | µg/L | 50.0 | | 67.2 | 21-133 | 6.95 | 65 | |
| 2-Nitrophenol | 39.7 | 10.0 | µg/L | 50.0 | | 79.4 | 29-182 | 6.08 | 55 | |
| 4-Nitrophenol | 22.2 | 10.0 | µg/L | 50.0 | | 44.4 | 10-132 | 1.39 | 131 | |
| Pentachlorophenol | 23.3 | 10.0 | µg/L | 50.0 | | 46.6 | 14-176 | 14.1 | 86 | |
| Phenanthrene | 41.2 | 5.00 | µg/L | 50.0 | | 82.4 | 54-120 | 11.4 | 39 | |
| 2-Methylphenol | 34.6 | 10.0 | µg/L | 50.0 | | 69.1 | 40-140 | 3.47 | 30 | |
| Phenol | 17.8 | 10.0 | µg/L | 50.0 | | 35.6 | 5-120 | 1.25 | 64 | |
| 3/4-Methylphenol | 32.7 | 20.0 | µg/L | 50.0 | | 65.4 | 40-140 | 0.829 | 30 | |
| Pyrene | 38.8 | 5.00 | µg/L | 50.0 | | 77.7 | 52-120 | 11.0 | 49 | |
| 2,4,6-Trichlorophenol | 40.0 | 10.0 | µg/L | 50.0 | | 79.9 | 37-144 | 11.6 | 58 | |
| Surrogate: 2-Fluorophenol | *102* | | µg/L | 200 | | 51.2 | 15-110 | | | |
| Surrogate: Phenol-d6 | *68.4* | | µg/L | 200 | | 34.2 | 15-110 | | | |
| Surrogate: Nitrobenzene-d5 | *78.1* | | µg/L | 100 | | 78.1 | 30-130 | | | |
| Surrogate: 2-Fluorobiphenyl | *85.8* | | µg/L | 100 | | 85.8 | 30-130 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266582 - SW-846 3510C** | | | | | | | | | | |
| **LCS Dup (B266582-BSD1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Surrogate: 2,4,6-Tribromophenol | *177* | | µg/L | 200 | | 88.7 | 15-110 | | | |
| Surrogate: p-Terphenyl-d14 | *92.2* | | µg/L | 100 | | 92.2 | 30-130 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266707 - SW-846 3510C** | | | | | | | | | | |
| **Blank (B266707-BLK1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| Aroclor-1016 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1016 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1221 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1221 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1232 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1232 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1242 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1242 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1248 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1248 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1254 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1254 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1260 | ND | 0.100 | µg/L | | | | | | | |
| Aroclor-1260 [2C] | ND | 0.100 | µg/L | | | | | | | |
| Surrogate: Decachlorobiphenyl | *0.894* | | µg/L | 1.00 | | 89.4 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | *0.894* | | µg/L | 1.00 | | 89.4 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | *0.774* | | µg/L | 1.00 | | 77.4 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | *0.786* | | µg/L | 1.00 | | 78.6 | 30-150 | | | |
| **LCS (B266707-BS1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| Aroclor-1016 | 0.478 | 0.200 | µg/L | 0.500 | | 95.5 | 50-140 | | | |
| Aroclor-1016 [2C] | 0.457 | 0.200 | µg/L | 0.500 | | 91.5 | 50-140 | | | |
| Aroclor-1260 | 0.452 | 0.200 | µg/L | 0.500 | | 90.4 | 8-140 | | | |
| Aroclor-1260 [2C] | 0.428 | 0.200 | µg/L | 0.500 | | 85.6 | 8-140 | | | |
| Surrogate: Decachlorobiphenyl | *1.94* | | µg/L | 2.00 | | 96.8 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | *1.93* | | µg/L | 2.00 | | 96.6 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | *1.63* | | µg/L | 2.00 | | 81.4 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | *1.65* | | µg/L | 2.00 | | 82.3 | 30-150 | | | |
| **LCS Dup (B266707-BSD1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| Aroclor-1016 | 0.501 | 0.200 | µg/L | 0.500 | | 100 | 50-140 | 4.76 | | |
| Aroclor-1016 [2C] | 0.483 | 0.200 | µg/L | 0.500 | | 96.6 | 50-140 | 5.43 | | |
| Aroclor-1260 | 0.476 | 0.200 | µg/L | 0.500 | | 95.2 | 8-140 | 5.21 | | |
| Aroclor-1260 [2C] | 0.449 | 0.200 | µg/L | 0.500 | | 89.7 | 8-140 | 4.70 | | |
| Surrogate: Decachlorobiphenyl | *2.02* | | µg/L | 2.00 | | 101 | 30-150 | | | |
| Surrogate: Decachlorobiphenyl [2C] | *2.02* | | µg/L | 2.00 | | 101 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene | *1.80* | | µg/L | 2.00 | | 89.9 | 30-150 | | | |
| Surrogate: Tetrachloro-m-xylene [2C] | *1.82* | | µg/L | 2.00 | | 91.0 | 30-150 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266384 - EPA 245.1** | | | | | | | | | | |
| **Blank (B266384-BLK1)** | | | | Prepared: 09/14/20 Analyzed: 09/16/20 | | | | | | |
| Mercury | ND | 0.00010 | mg/L | | | | | | | |
| **LCS (B266384-BS1)** | | | | Prepared: 09/14/20 Analyzed: 09/16/20 | | | | | | |
| Mercury | 0.00398 | 0.00010 | mg/L | 0.00400 | | 99.5 | 85-115 | | | |
| **LCS Dup (B266384-BSD1)** | | | | Prepared: 09/14/20 Analyzed: 09/16/20 | | | | | | |
| Mercury | 0.00403 | 0.00010 | mg/L | 0.00400 | | 101 | 85-115 | 1.26 | 20 | |
| **Batch B266418 - EPA 200.7** | | | | | | | | | | |
| **Blank (B266418-BLK1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Iron | ND | 0.050 | mg/L | | | | | | | |
| Hardness | ND | 1.4 | mg/L | | | | | | | |
| **LCS (B266418-BS1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Iron | 4.16 | 0.050 | mg/L | 4.00 | | 104 | 85-115 | | | |
| Hardness | 27 | 1.4 | mg/L | 26.4 | | 101 | 85-115 | | | |
| **LCS Dup (B266418-BSD1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Iron | 4.03 | 0.050 | mg/L | 4.00 | | 101 | 85-115 | 3.30 | 20 | |
| Hardness | 26 | 1.4 | mg/L | 26.4 | | 98.2 | 85-115 | 3.13 | 20 | |
| **Batch B266420 - EPA 200.8** | | | | | | | | | | |
| **Blank (B266420-BLK1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Antimony | ND | 1.0 | µg/L | | | | | | | |
| Arsenic | ND | 0.80 | µg/L | | | | | | | |
| Cadmium | ND | 0.20 | µg/L | | | | | | | |
| Chromium | ND | 1.0 | µg/L | | | | | | | |
| Copper | ND | 1.0 | µg/L | | | | | | | |
| Lead | ND | 0.50 | µg/L | | | | | | | |
| Nickel | ND | 5.0 | µg/L | | | | | | | |
| Selenium | ND | 5.0 | µg/L | | | | | | | |
| Silver | ND | 0.20 | µg/L | | | | | | | |
| Zinc | ND | 10 | µg/L | | | | | | | |
| **LCS (B266420-BS1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Antimony | 498 | 10 | µg/L | 500 | | 99.6 | 85-115 | | | |
| Arsenic | 512 | 8.0 | µg/L | 500 | | 102 | 85-115 | | | |
| Cadmium | 519 | 2.0 | µg/L | 500 | | 104 | 85-115 | | | |
| Chromium | 516 | 10 | µg/L | 500 | | 103 | 85-115 | | | |
| Copper | 1000 | 10 | µg/L | 1000 | | 100 | 85-115 | | | |
| Lead | 508 | 5.0 | µg/L | 500 | | 102 | 85-115 | | | |
| Nickel | 516 | 50 | µg/L | 500 | | 103 | 85-115 | | | |
| Selenium | 502 | 50 | µg/L | 500 | | 100 | 85-115 | | | |
| Silver | 512 | 2.0 | µg/L | 500 | | 102 | 85-115 | | | |
| Zinc | 1010 | 100 | µg/L | 1000 | | 101 | 85-115 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266420 - EPA 200.8** | | | | | | | | | | |
| **LCS Dup (B266420-BSD1)** | | | | Prepared: 09/14/20 Analyzed: 09/15/20 | | | | | | |
| Antimony | 493 | 10 | µg/L | 500 | | 98.7 | 85-115 | 0.911 | 20 | |
| Arsenic | 510 | 8.0 | µg/L | 500 | | 102 | 85-115 | 0.354 | 20 | |
| Cadmium | 518 | 2.0 | µg/L | 500 | | 104 | 85-115 | 0.192 | 20 | |
| Chromium | 518 | 10 | µg/L | 500 | | 104 | 85-115 | 0.415 | 20 | |
| Copper | 1010 | 10 | µg/L | 1000 | | 101 | 85-115 | 0.0732 | 20 | |
| Lead | 510 | 5.0 | µg/L | 500 | | 102 | 85-115 | 0.389 | 20 | |
| Nickel | 517 | 50 | µg/L | 500 | | 103 | 85-115 | 0.237 | 20 | |
| Selenium | 507 | 50 | µg/L | 500 | | 101 | 85-115 | 1.15 | 20 | |
| Silver | 516 | 2.0 | µg/L | 500 | | 103 | 85-115 | 0.838 | 20 | |
| Zinc | 1010 | 100 | µg/L | 1000 | | 101 | 85-115 | 0.0983 | 20 | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266331 - SM21-22 3500 Cr B** | | | | | | | | | | |
| **Blank (B266331-BLK1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Hexavalent Chromium | ND | 0.0040 | mg/L | | | | | | | |
| **LCS (B266331-BS1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Hexavalent Chromium | 0.10 | 0.0040 | mg/L | 0.100 | | 104 | 90-115 | | | |
| **LCS Dup (B266331-BSD1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Hexavalent Chromium | 0.11 | 0.0040 | mg/L | 0.100 | | 105 | 90-115 | 1.24 | 11 | |
| **Batch B266332 - SM21-22 4500 CL G** | | | | | | | | | | |
| **Blank (B266332-BLK1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Chlorine, Residual | ND | 0.020 | mg/L | | | | | | | Z-01 |
| **LCS (B266332-BS1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Chlorine, Residual | 0.71 | 0.020 | mg/L | 0.641 | | 110 | 85.3-130 | | | Z-01 |
| **LCS Dup (B266332-BSD1)** | | | | Prepared & Analyzed: 09/11/20 | | | | | | |
| Chlorine, Residual | 0.70 | 0.020 | mg/L | 0.641 | | 109 | 85.3-130 | 1.10 | 13.6 | Z-01 |
| **Batch B266356 - EPA 350.1** | | | | | | | | | | |
| **Blank (B266356-BLK1)** | | | | Prepared: 09/13/20 Analyzed: 09/16/20 | | | | | | |
| Ammonia as N | ND | 0.10 | mg/L | | | | | | | |
| **LCS (B266356-BS1)** | | | | Prepared: 09/13/20 Analyzed: 09/16/20 | | | | | | |
| Ammonia as N | 1.9 | 0.10 | mg/L | 2.00 | | 95.6 | 90-110 | | | |
| **LCS Dup (B266356-BSD1)** | | | | Prepared: 09/13/20 Analyzed: 09/16/20 | | | | | | |
| Ammonia as N | 1.9 | 0.10 | mg/L | 2.00 | | 93.8 | 90-110 | 2.01 | 20 | |
| **Batch B266372 - SM21-22 2540D** | | | | | | | | | | |
| **Blank (B266372-BLK1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Total Suspended Solids | ND | 2.5 | mg/L | | | | | | | |
| **LCS (B266372-BS1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Total Suspended Solids | 146 | 10 | mg/L | 200 | | 73.0 | 57.4-123 | | | |
| **Batch B266422 - SM21-22 2540D** | | | | | | | | | | |
| **Blank (B266422-BLK1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Total Suspended Solids | ND | 2.5 | mg/L | | | | | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266422 - SM21-22 2540D** | | | | | | | | | | |
| **LCS (B266422-BS1)** | | | | Prepared & Analyzed: 09/14/20 | | | | | | |
| Total Suspended Solids | 146 | 10 | mg/L | 200 | | 73.0 | 57.4-123 | | | |
| **Batch B266491 - EPA 300.0** | | | | | | | | | | |
| **Blank (B266491-BLK1)** | | | | Prepared & Analyzed: 09/15/20 | | | | | | |
| Chloride | ND | 1.0 | mg/L | | | | | | | |
| **LCS (B266491-BS1)** | | | | Prepared & Analyzed: 09/15/20 | | | | | | |
| Chloride | 9.8 | | mg/L | 10.0 | | 97.8 | 90-110 | | | |
| **LCS Dup (B266491-BSD1)** | | | | Prepared & Analyzed: 09/15/20 | | | | | | |
| Chloride | 9.8 | | mg/L | 10.0 | | 98.0 | 90-110 | 0.246 | 20 | |
| **Batch B266666 - EPA 300.0** | | | | | | | | | | |
| **Blank (B266666-BLK1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Chloride | ND | 1.0 | mg/L | | | | | | | |
| **LCS (B266666-BS1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Chloride | 9.9 | | mg/L | 10.0 | | 99.3 | 90-110 | | | |
| **LCS Dup (B266666-BSD1)** | | | | Prepared & Analyzed: 09/16/20 | | | | | | |
| Chloride | 9.9 | | mg/L | 10.0 | | 99.4 | 90-110 | 0.0725 | 20 | |
| **Batch B266673 - EPA 1664B** | | | | | | | | | | |
| **Blank (B266673-BLK1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| Silica Gel Treated HEM (SGT-HEM) | ND | 1.4 | mg/L | | | | | | | |
| **LCS (B266673-BS1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| Silica Gel Treated HEM (SGT-HEM) | 9.9 | | mg/L | 10.0 | | 99.0 | 64-132 | | | |

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**QUALITY CONTROL**

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

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B266706 - EPA 504 water** | | | | | | | | | | |
| **Blank (B266706-BLK1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.021 | µg/L | | | | | | | |
| Surrogate: 1,3-Dibromopropane | *1.06* | | µg/L | 1.04 | | 102 | 70-130 | | | |
| **LCS (B266706-BS1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| 1,2-Dibromoethane (EDB) | 0.238 | 0.021 | µg/L | 0.260 | | 91.6 | 70-130 | | | |
| Surrogate: 1,3-Dibromopropane | *1.04* | | µg/L | 1.04 | | 99.8 | 70-130 | | | |
| **LCS Dup (B266706-BSD1)** | | | | Prepared & Analyzed: 09/17/20 | | | | | | |
| 1,2-Dibromoethane (EDB) | 0.233 | 0.021 | µg/L | 0.263 | | 88.4 | 70-130 | 2.21 | | |
| Surrogate: 1,3-Dibromopropane | *1.09* | | µg/L | 1.05 | | 103 | 70-130 | | | |

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# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*EPA 504.1*

LCS

Lab Sample ID: B266706-BS1 Date(s) Analyzed: 09/17/2020 09/17/2020

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

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

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 1,2-Dibromoethane (EDB) | 1 | 3.437 | 0.000 | 0.000 | 0.238 | |

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# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*EPA 504.1*

**LCS Dup**

Lab Sample ID: B266706-BSD1 Date(s) Analyzed: 09/17/2020 09/17/2020

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

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

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 1,2-Dibromoethane (EDB) | 1 | 3.437 | 0.000 | 0.000 | 0.233 | |

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# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*608.3*

LCS

Lab Sample ID: B266707-BS1 Date(s) Analyzed: 09/17/2020 09/17/2020

Instrument ID (1): ECD10 Instrument ID (2): ECD10

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

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| Aroclor-1016 | 1 | 0.000 | 0.000 | 0.000 | 0.478 | |
| | 2 | 0.000 | 0.000 | 0.000 | 0.457 | 4.9 |
| Aroclor-1260 | 1 | 0.000 | 0.000 | 0.000 | 0.452 | |
| | 2 | 0.000 | 0.000 | 0.000 | 0.428 | 5.0 |

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# IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*608.3*

**LCS Dup**

Lab Sample ID: B266707-BSD1 Date(s) Analyzed: 09/17/2020 09/17/2020

Instrument ID (1): ECD10 Instrument ID (2): ECD10

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

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| Aroclor-1016 | 1 | 0.000 | 0.000 | 0.000 | 0.501 | |
| | 2 | 0.000 | 0.000 | 0.000 | 0.483 | 3.5 |
| Aroclor-1260 | 1 | 0.000 | 0.000 | 0.000 | 0.476 | |
| | 2 | 0.000 | 0.000 | 0.000 | 0.449 | 6.7 |

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**FLAG/QUALIFIER SUMMARY**

| | |
|---|---|
| * | QC result is outside of established limits. |
| † | Wide recovery limits established for difficult compound. |
| ‡ | Wide RPD limits established for difficult compound. |
| # | Data exceeded client recommended or regulatory level |
| ND | Not Detected |
| RL | Reporting Limit is at the level of quantitation (LOQ) |
| DL | Detection Limit is the lower limit of detection determined by the MDL study |
| MCL | Maximum Contaminant Level |
| | Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded. |
| | No results have been blank subtracted unless specified in the case narrative section. |
| DL-15 | Sample required a dilution due to low internal standard recovery of the lesser diluted digestion, reporting limit is elevated. |
| J | Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag). |
| L-04 | Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the low side. |
| V-04 | Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated. |
| V-05 | Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound. |
| Z-01 | SM 4500 CL G test had a calibration point outside of acceptable back-calculated recovery. Re-analysis yielded similar non-conformance. |

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**CERTIFICATIONS**

**Certified Analyses included in this Report**

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

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**CERTIFICATIONS**

**Certified Analyses included in this Report**

| Analyte | Certifications |
|---|---|
| ***624.1 in Water*** | |
| Tetrachloroethylene | CT,NY,MA,NH,RI,NC,ME,VA |
| Toluene | CT,NY,MA,NH,RI,NC,ME,VA |
| 1,1,1-Trichloroethane | CT,NY,MA,NH,RI,NC,ME,VA |
| 1,1,2-Trichloroethane | CT,NY,MA,NH,RI,NC,ME,VA |
| Trichloroethylene | CT,NY,MA,NH,RI,NC,ME,VA |
| Trichlorofluoromethane (Freon 11) | CT,NY,MA,NH,RI,NC,ME,VA |
| Vinyl Chloride | CT,NY,MA,NH,RI,NC,ME,VA |
| m+p Xylene | CT,NY,MA,NH,RI,NC |
| o-Xylene | CT,NY,MA,NH,RI,NC |
| ***625.1 in Water*** | |
| Acenaphthene | CT,MA,NH,NY,NC,RI,ME,VA |
| Acenaphthylene | CT,MA,NH,NY,NC,RI,ME,VA |
| Anthracene | CT,MA,NH,NY,NC,RI,ME,VA |
| Benzo(g,h,i)perylene | CT,MA,NH,NY,NC,RI,ME,VA |
| Butylbenzylphthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| 4-Chloro-3-methylphenol | CT,MA,NH,NY,NC,RI,VA |
| 2-Chlorophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Di-n-butylphthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| 1,3-Dichlorobenzene | MA,NC |
| 1,4-Dichlorobenzene | MA,NC |
| 1,2-Dichlorobenzene | MA,NC |
| 2,4-Dichlorophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Diethylphthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| 2,4-Dimethylphenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Dimethylphthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| 4,6-Dinitro-2-methylphenol | CT,MA,NH,NY,NC,RI,ME,VA |
| 2,4-Dinitrophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Di-n-octylphthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| Bis(2-Ethylhexyl)phthalate | CT,MA,NH,NY,NC,RI,ME,VA |
| Fluoranthene | CT,MA,NH,NY,NC,RI,ME,VA |
| Fluorene | CT,MA,NH,NY,NC,RI,ME,VA |
| Naphthalene | CT,MA,NH,NY,NC,RI,ME,VA |
| 2-Nitrophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| 4-Nitrophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Pentachlorophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| Phenanthrene | CT,MA,NH,NY,NC,RI,ME,VA |
| 2-Methylphenol | NY,NC |
| Phenol | CT,MA,NH,NY,NC,RI,ME,VA |
| 3/4-Methylphenol | NY,NC |
| Pyrene | CT,MA,NH,NY,NC,RI,ME,VA |
| 2,4,6-Trichlorophenol | CT,MA,NH,NY,NC,RI,ME,VA |
| 2-Fluorophenol | NC |
| 2-Fluorophenol | NC,VA |
| Phenol-d6 | VA |
| Nitrobenzene-d5 | VA |
| ***EPA 200.7 in Water*** | |

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**CERTIFICATIONS**

**Certified Analyses included in this Report**

| Analyte | Certifications |
|---|---|
| ***EPA 200.7 in Water*** | |
| Iron | CT,MA,NH,NY,RI,NC,ME,VA |
| Hardness | CT,MA,NH,NY,RI,VA |
| ***EPA 200.8 in Water*** | |
| Antimony | CT,MA,NH,NY,RI,NC,ME,VA |
| Arsenic | CT,MA,NH,NY,RI,NC,ME,VA |
| Cadmium | CT,MA,NH,NY,RI,NC,ME,VA |
| Chromium | CT,MA,NH,NY,RI,NC,ME,VA |
| Copper | CT,MA,NH,NY,RI,NC,ME,VA |
| Lead | CT,MA,NH,NY,RI,NC,ME,VA |
| Nickel | CT,MA,NH,NY,RI,NC,ME,VA |
| Selenium | CT,MA,NH,NY,RI,NC,ME,VA |
| Silver | CT,MA,NH,NY,RI,NC,ME,VA |
| Zinc | CT,MA,NH,NY,RI,NC,ME,VA |
| ***EPA 245.1 in Water*** | |
| Mercury | CT,MA,NH,RI,NY,NC,ME,VA |
| ***EPA 300.0 in Water*** | |
| Chloride | NC,NY,MA,VA,ME,NH,CT,RI |
| ***EPA 350.1 in Water*** | |
| Ammonia as N | NC,NY,MA,NH,RI,ME,VA |
| ***SM21-22 2540D in Water*** | |
| Total Suspended Solids | CT,MA,NH,NY,RI,NC,ME,VA |
| ***SM21-22 3500 Cr B in Water*** | |
| Hexavalent Chromium | NY,CT,NH,RI,ME,VA,NC |
| ***SM21-22 4500 CL G in Water*** | |
| Chlorine, Residual | CT,MA,RI,ME |
| ***SM21-22 4500 CN E in Water*** | |
| Cyanide | CT,MA,NH,NY,RI,NC,ME,VA |

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

| Code | Description | Number | Expires |
|---|---|---|---|
| AIHA | AIHA-LAP, LLC - ISO17025:2017 | 100033 | 03/1/2022 |
| MA | Massachusetts DEP | M-MA100 | 06/30/2021 |
| CT | Connecticut Department of Publilc Health | PH-0567 | 09/30/2021 |
| NY | New York State Department of Health | 10899 NELAP | 04/1/2021 |
| NH-S | New Hampshire Environmental Lab | 2516 NELAP | 02/5/2021 |
| RI | Rhode Island Department of Health | LAO00112 | 12/30/2020 |
| NC | North Carolina Div. of Water Quality | 652 | 12/31/2020 |
| NJ | New Jersey DEP | MA007 NELAP | 06/30/2021 |
| FL | Florida Department of Health | E871027 NELAP | 06/30/2021 |
| VT | Vermont Department of Health Lead Laboratory | LL015036 | 07/30/2021 |
| ME | State of Maine | 2011028 | 06/9/2021 |
| VA | Commonwealth of Virginia | 460217 | 12/14/2020 |
| NH-P | New Hampshire Environmental Lab | 2557 NELAP | 09/6/2021 |
| VT-DW | Vermont Department of Health Drinking Water | VT-255716 | 06/12/2021 |
| NC-DW | North Carolina Department of Health | 25703 | 07/31/2021 |
| PA | Commonwealth of Pennsylvania DEP | 68-05812 | 06/30/2021 |
| MI | Dept. of Env, Great Lakes, and Energy | 9100 | 10/1/2020 |

2017672

con-test ANALYTICAL LABORATORY

Phone: 413-525-2332
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http://www.contestlabs.com Doc # 381 Rev 1_03242017

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028



Company Name: Lockwood Remediation Technologies

Address: 89 Crawford Street, Leominster, MA 01453

Phone: (774) 450-7177

Project Name:

Project Location:

Project Number: 2-2085

Project Manager: Jake Jennings

Con-Test Quote Name/Number:

Invoice Recipient:

Sampled By:

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

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

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

| Con-Test Work Order# | Client Sample ID / Description | Beginning Date/Time | Ending Date/Time | Composite | Grab | [1]Matrix Code | Conc Code | Ammonia | Chloride | TRC | Total Metals (Sb,As,Cd, Cr III, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn) | Cyanide | Voc's | Semi-Voc's | PCB's | TPH | TSS | EDB | Hardness | Chromium VI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of Containers | | | | | | | | 3 | 2 | 2 | 2 | 2 | 6 | 4 | 4 | 4 | 2 | 6 | 3 | 3 |
| [2] Preservation Code | | | | | | | | S | I | I | N | X | H | I | I | S | I | T | N | I |
| [3] Container Code | | | | | | | | P | P | p | P | P | V | A | A | A | P | V | P | P |
| 1 | MW | 9/11 | 10:00 | | X | GW | U | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 2 | Under Drain System | 9/11 | 10:30 | | X | GW | U | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 3 | Receiving Water | 9/11 | 1045 | | X | GW | U | X | | | X | | | | | | | | X | X |

ANALYSIS REQUESTED

**Dissolved Metals Samples**
O Field Filtered
O Lab to Filter

**Orthophosphate Samples**
O Field Filtered
O Lab to Filter

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

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

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

Comments: pH In: MW 7.8 pH RW 7.2
pH Underdrain 6.4

Please us ...e Conc

Project name is 100 Cambridgeside Place per Jake J.
-KKM 9/24/2020

## Samples are for NPDES RGP Parameters.

| | |
|---|---|
| Relinquished by: (signature) | Date/Time: 9/11 2:00 |
| Received by: (signature) | Date/Time: 9/11/20 1410 |
| Relinquished by: (signature) | Date/Time: 9/11/20 1745 |
| ...ved by: (signature) 3.0, 2.4 | Date/Time: 9/11/20 1745 |
| ...quished by: (signature) | Date/Time: |
| ...ived by: (signature) | Date/Time: |

**Detection Limit Requirements**
MA
CT
Other:

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

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NELAC and AIHA-LAP, LLC Accredited

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

**Other**
☐ Chromatogram
☐ *AIHA-LAP,LLC*

**PCB ONLY**
☐ Soxhlet
☐ Non Soxhlet



Table of Contents

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

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

**Client** LRT

**Received By** [signature] Date 9/11/20 Time 1245

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

By Gun # 4 Actual Temp -3.0, 2.4

Were samples within Temperature? 2-6°C T By Blank # _____ Actual Temp - _____

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

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

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

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

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

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

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

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? Mandi

Is there enough Volume? T

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

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

Were trip blanks received? F On COC? F

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

| Vials | # | Containers: | # | | # | | |
|---|---|---|---|---|---|---|---|
| Unp- | | 1 Liter Amb. | 12 | 1 Liter Plastic | 2 | 16 oz Amb. | |
| HCL- | 6 | 500 mL Amb. | | 500 mL Plastic | | 8oz Amb/Clear | |
| Meoh- | | 250 mL Amb. | | 250 mL Plastic | 14 | 4oz Amb/Clear | |
| Bisulfate- | | Flashpoint | | Col./Bacteria | | 2oz Amb/Clear | |
| DI- | | Other Glass | | Other Plastic | | Encore | |
| Thiosulfate- | 6 | SOC Kit | | Plastic Bag | | Frozen: | |
| Sulfuric- | | Perchlorate | | Ziplock | | | |

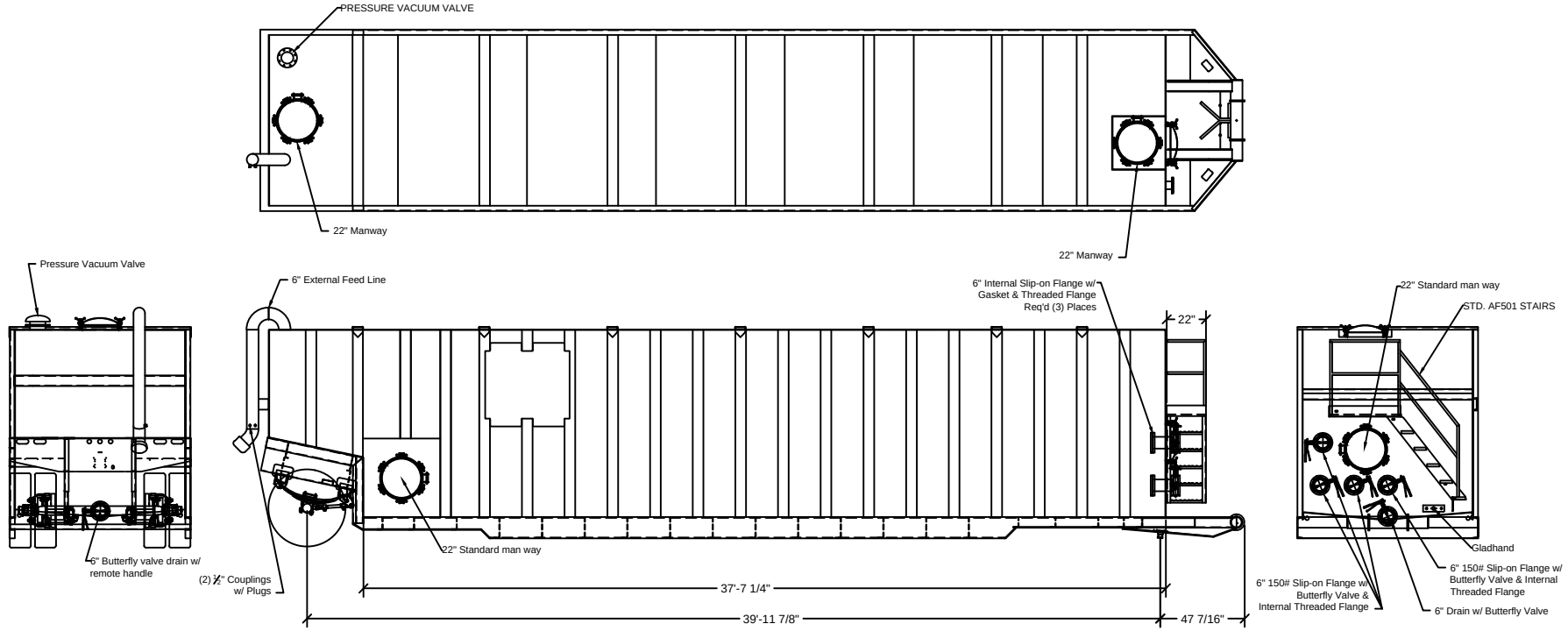
**Unused Media**

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

**Comments:**

# Appendix C

# Cutsheets



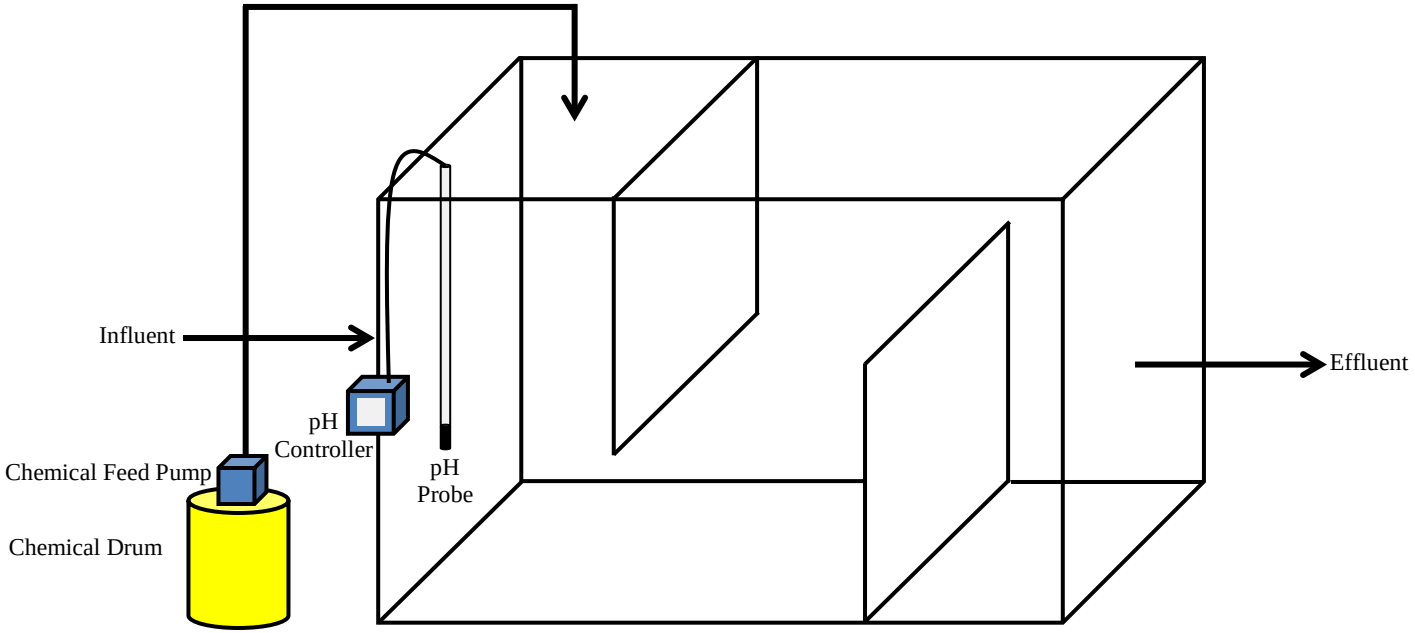

## STANDARD SPECIFICATION

CAPACITY: .... 21,000 GALLONS (500 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
TOP SHEET: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE
SUSPENSION: .... 3 LEAF SPRING, 22,500 LBS. CACPACITY
AXLE: .... 77.5" TRACK, 22,500 LBS. CAPACITY
TIRES: .... 11R22.5
WHEELS: .... 8.25 x 22.5 STEEL
MANWAYS: .... 3 - 22" DIA. FRONT & TOP
1 - 22" DIA. CURB SIDE
VALVES: .... 1 - BLAYLOCK PRESSURE VALVE
5 - 6" BUTTERFLY (FRONT)
1 - 6" BUTTERFLY VALVE (REAR DRAIN)
INLET PIPING: .... 1 - 6" PIPE SYSTEM (REAR)
BLAST: .... (INTERIOR) SSPC-SP-10 (NEAR WHITE)
(EXTERIOR) SSPC-SP-6 (COMMERCIAL BLAST)
PAINT: .... (INTERIOR) EPOXYPHENOLIC 100% SOLID 20.0 MILS D.F.T.
(EXTERIOR) PRIMER COAT EPOXY 3.0 TO 4.0 MILS D.F.T.
(EXTERIOR) FINISH COAT POLURETHANE 3.0 TO 4.0 D.F.T.

# 21,000 Gal. Frac Tank

**Lockwood Remediation Technologies, LLC**

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




**Notes:**

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

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

**Configuration of pH Adjustment System**

Lockwood Remediation Technologies, LLC


# One Controller for the Broadest Range of Sensors.

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

## Maximum Versatility

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

## Ease of Use and Confidence in Results

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

## Wide Variety of Communication Options

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


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

## Controller Comparison

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

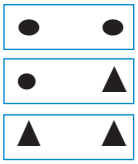
## Choose from Hach's Broad Range of Digital and Analog Sensors

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

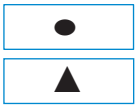
● = Digital ▲ = Analog

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

**2 Channel Configurations**



**1 Channel Configurations**



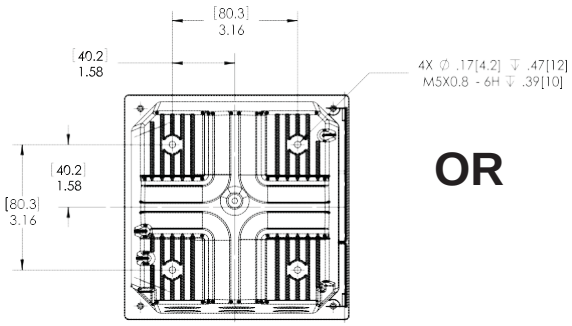
## Specifications*

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

**Subject to change without notice.*

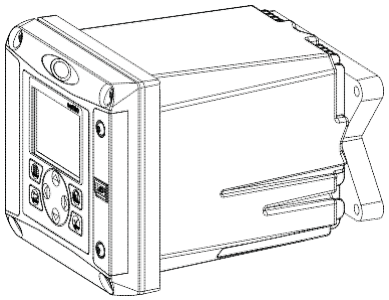
# Dimensions

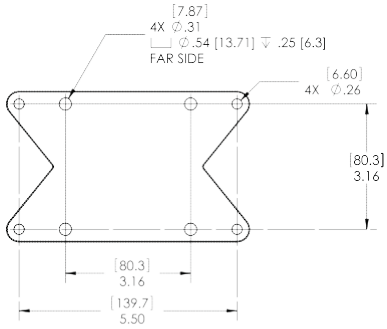
## *Surface Mounting Dimensions*




Mounting Dimensions
(Rear View)

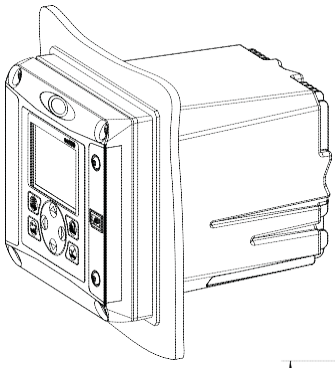
**OR**

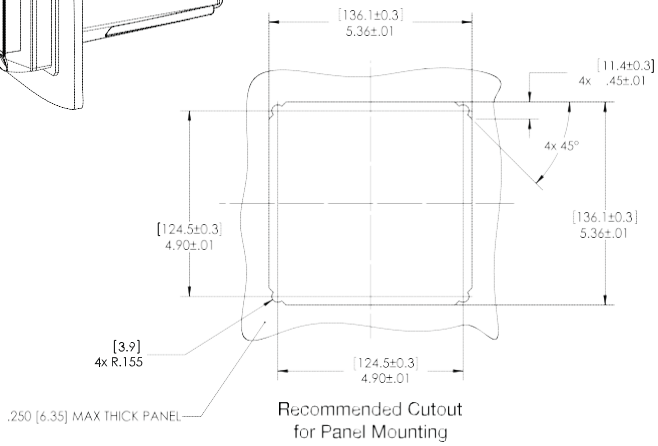




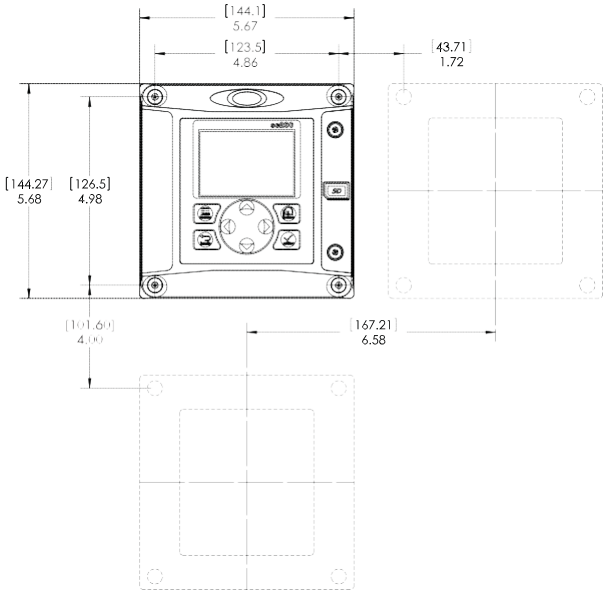

Bracket (supplied) for Surface Mounting
(Not compatible with Weather and Sun Shield p/n 9220600 when surface mounting.)

## *Panel Mounting Dimensions*



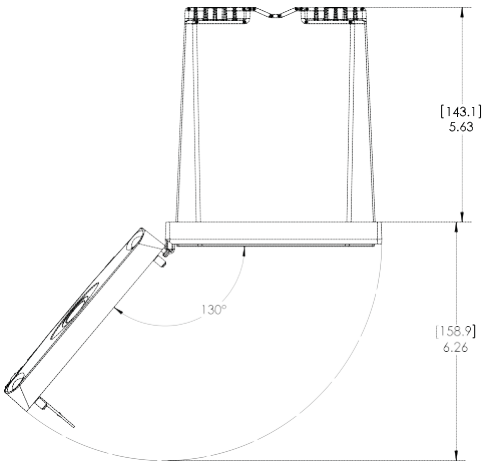



Recommended Cutout
for Panel Mounting

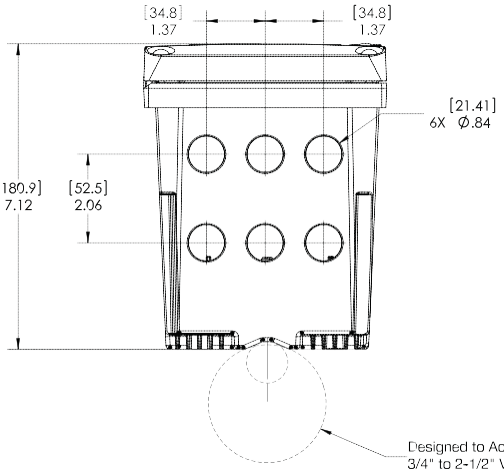



Minimum Spacing Dimensions
for Group Mounting

## *Top and Bottom Views*

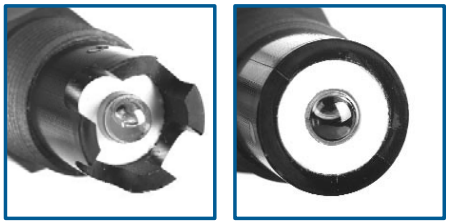



Door Opening Details



# 3/4-inch Combination pH and ORP Sensor Kits

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



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



## Features and Benefits

### Low Price—High Performance

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

### Special Electrode Configurations

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

### Temperature Compensation Element Option

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

### Versatile Mounting Styles

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

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

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

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

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

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

## Specifications*

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

### Combination pH Sensors

*Measuring Range*
0 to 14 pH

*Accuracy*
Less than 0.1 pH under reference conditions

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

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

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

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

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

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

*Wetted Materials*

*Convertible style:* Ryton® body (glass filled)

*Insertion style:* PVDF body (Kynar®)

*Sanitary style*: 316 stainless steel sleeved PVDF body

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

*Warranty*
90 days

### Combination ORP Sensors

*Measuring Range*
-2000 to +2000 millivolts

*Accuracy*
Limited to calibration solution accuracy (± 20 mV)

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

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

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

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

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

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

*Wetted Materials*

*Convertible style:* Ryton® body (glass filled)

*Insertion style:* PVDF body (Kynar®)

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

*Warranty*
90 days

**Specifications subject to change without notice.*



## Engineering Specifications

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

# Dimensions

## Convertible Style Sensor

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

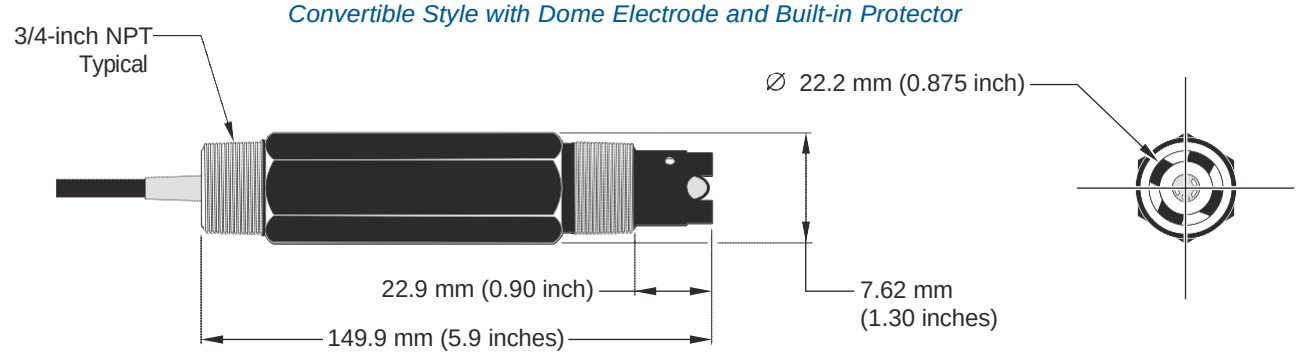
## Insertion Style Sensor

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

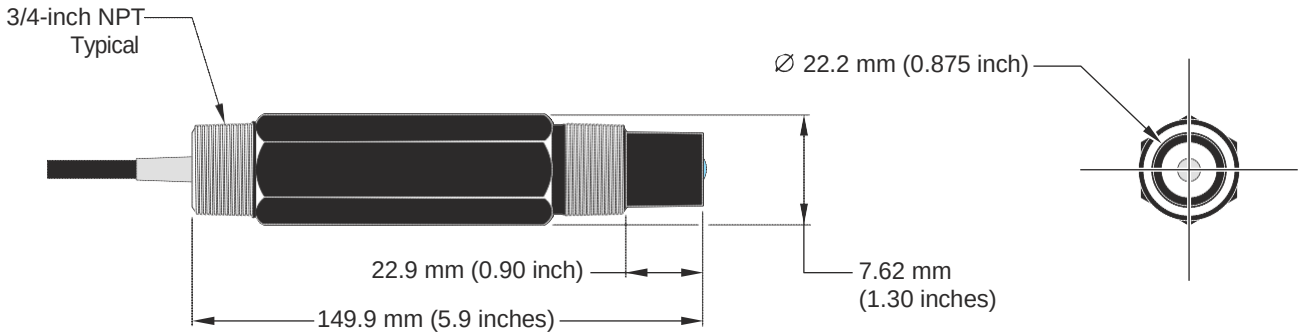
## Sanitary Style Sensor

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

*Convertible Style with Dome Electrode and Built-in Protector*




*Convertible Style with Flat Electrode*



Lockwood Remediation Technologies, LLC

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

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

## Features

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

## Controls

Manual Stroke Rate

Manual Stroke Length

External Pacing - Optional

External Pace With Stop - Optional (125 SPM only)

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

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

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

## Operating Benefits

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

## Aftermarket

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

# Series A Plus
# Electronic Metering Pumps

Lockwood Remediation Technologies, LLC

# Series A Plus

## Specifications and Model Selection

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

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

## Engineering Data

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

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

## Engineering Data

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

## Custom Engineered Designs - Pre-Engineered Systems

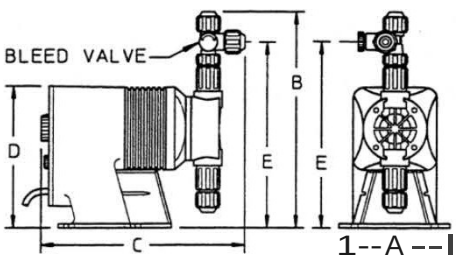
Pre-Engineered Systems

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

## Dimensions

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

NOTE: Inches X 2.54 cm



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

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

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

## A95OVER Specifications

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

## Metric Equivalent Specifications

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

# A95OVER Technical Information

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

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

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

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

# Sulfuric Acid, 70-100%

Safety Data Sheet

According to U.S. Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations and according to Canada's Hazardous Products Regulation, February 11, 2015.

Revision Date: 05/07/2018 Date of Issue: 05/31/2016 Version: 4.0

## SECTION 1: IDENTIFICATION

### Product Identifier

**Product Form:** Mixture

**Product Name:** Sulfuric Acid, 70-100%

**Formula:** $H_2O_4S$

### Intended Use of the Product

**Use Of The Substance/Mixture:** Industrial use.

### Name, Address, and Telephone of the Responsible Party

**Manufacturer**

CHEMTRADE LOGISTICS INC.
155 Gordon Baker Road
Suite 300
Toronto, Ontario M2H 3N5
For SDS Info: (416) 496-5856
www.chemtradelogistics.com

### Emergency Telephone Number

**Emergency Number :** Canada: CANUTEC +1-613-996-6666 / US: CHEMTREC +1-800-424-9300
INTERNATIONAL: +1-703-741-5970
Chemtrade Emergency Contact: (866) 416-4404
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

## SECTION 2: HAZARDS IDENTIFICATION

### Classification of the Substance or Mixture

**GHS Classification**

| | |
|---|---|
| Met. Corr. 1 | H290 |
| Skin Corr. 1A | H314 |
| Eye Dam. 1 | H318 |
| Carc. 1A | H350 |
| Aquatic Acute 3 | H402 |

Full text of hazard classes and H-statements : see section 16

### Label Elements

**GHS Labeling**

**Hazard Pictograms :**


GHS05


GHS08

**Signal Word :** Danger

**Hazard Statements :** H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H318 - Causes serious eye damage.
H350 - May cause cancer (Inhalation).
H402 - Harmful to aquatic life.

**Precautionary Statements :** P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P234 - Keep only in original container.
P260 - Do not breathe vapors, mist, or spray.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, and eye protection.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P310 - Immediately call a POISON CENTER or doctor.
P321 - Specific treatment (see section 4 on this SDS).
P363 - Wash contaminated clothing before reuse.
P390 - Absorb spillage to prevent material damage.
P405 - Store locked up.
P406 - Store in corrosive resistant container with a resistant inner liner.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

### Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

### Unknown acute toxicity

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### Mixture

| Name | Product Identifier | %* | GHS Ingredient Classification |
|---|---|---|---|
| Sulfuric acid** | (CAS-No.) 7664-93-9 | 70 - 100 | Met. Corr. 1, H290<br>Skin Corr. 1A, H314<br>Eye Dam. 1, H318<br>Carc. 1A, H350<br>Aquatic Acute 3, H402 |
| Water | (CAS-No.) 7732-18-5 | 0.1 - 30 | Not classified |

Full text of H-phrases: see section 16

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

**Strong inorganic acid aerosols/mists containing this substance are carcinogenic to humans via inhalation. Under normal conditions of use this route of exposure is not expected.

## SECTION 4: FIRST AID MEASURES

### Description of First-aid Measures

**General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

**Skin Contact:** Remove contaminated clothing. Immediately flush skin with plenty of water for at least 30 minutes. Get immediate medical advice/attention. Wash contaminated clothing before reuse.

**Eye Contact:** Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

**Ingestion:** Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

### Most Important Symptoms and Effects Both Acute and Delayed

**General:** Corrosive to eyes, respiratory system and skin. May cause cancer.

**Inhalation:** May be corrosive to the respiratory tract.

**Skin Contact:** Causes severe irritation which will progress to chemical burns.

**Eye Contact:** Causes permanent damage to the cornea, iris, or conjunctiva.

**Ingestion:** May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

**Chronic Symptoms:** Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans. Prolonged inhalation of fumes or mists may cause erosion of the teeth.

### Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

## SECTION 5: FIRE-FIGHTING MEASURES

### Extinguishing Media

**Suitable Extinguishing Media:** Foam, carbon dioxide, dry chemical.

**Unsuitable Extinguishing Media:** Do not use water. Do not get water inside containers. Do not apply water stream directly at source of leak.

### Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Not flammable.

**Explosion Hazard:** Product is not explosive.

**Reactivity:** May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction. This product may act as an oxidizer.

### Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** Use water spray or fog for cooling exposed containers.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

**Hazardous Combustion Products**: Toxic fumes are released.

**Other Information:** Do not allow run-off from fire fighting to enter drains or water courses.

### Reference to Other Sections

Refer to Section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Do not get in eyes, on skin, or on clothing. Do not breathe vapor, mist or spray. Do not handle until all safety precautions have been read and understood.

#### For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protective equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection.

**Emergency Procedures:** Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

### Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

### Methods and Materials for Containment and Cleaning Up

**For Containment:** Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Absorb spillage to prevent material damage. Cautiously neutralize spilled liquid. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

### Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

## SECTION 7: HANDLING AND STORAGE

### Precautions for Safe Handling

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle empty containers with care because they may still present a hazard. Do not get in eyes, on skin, or on clothing. Do not breathe vapors, mist, spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

**Additional Hazards When Processed:** May be corrosive to metals. May release corrosive vapors. NEVER pour water into this substance; when dissolving or diluting always add it slowly to the water.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures.

### Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations.

**Storage Conditions:** Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from extremely high or low temperatures and incompatible materials. Store in original container or corrosive resistant and/or lined container.

**Incompatible Materials:** Combustible materials. Reducing agents. Strong oxidizers. Strong bases. Metals. Water.

### Specific End Use(s)

Industrial use.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

| **Sulfuric acid (7664-93-9)** | | |
|---|---|---|
| **Mexico** | OEL TWA (mg/m³) | 1 mg/m³ |
| **USA ACGIH** | ACGIH TWA (mg/m³) | 0.2 mg/m³ (thoracic particulate matter) |
| **USA ACGIH** | ACGIH chemical category | Suspected Human Carcinogen contained in strong inorganic acid mists |
| **USA OSHA** | OSHA PEL (TWA) (mg/m³) | 1 mg/m³ |
| **USA NIOSH** | NIOSH REL (TWA) (mg/m³) | 1 mg/m³ |
| **USA IDLH** | US IDLH (mg/m³) | 15 mg/m³ |
| **Alberta** | OEL STEL (mg/m³) | 3 mg/m³ |
| **Alberta** | OEL TWA (mg/m³) | 1 mg/m³ |
| **British Columbia** | OEL TWA (mg/m³) | 0.2 mg/m³ (Thoracic, contained in strong inorganic acid mists) |
| **Manitoba** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic particulate matter) |
| **New Brunswick** | OEL STEL (mg/m³) | 3 mg/m³ |
| **New Brunswick** | OEL TWA (mg/m³) | 1 mg/m³ |
| **Newfoundland & Labrador** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic particulate matter) |
| **Nova Scotia** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic particulate matter) |
| **Nunavut** | OEL STEL (mg/m³) | 0.6 mg/m³ (thoracic fraction) |
| **Nunavut** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic fraction) |
| **Northwest Territories** | OEL STEL (mg/m³) | 0.6 mg/m³ (thoracic fraction, strong acid mists only) |
| **Northwest Territories** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic fraction, strong acid mists only) |
| **Ontario** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic) |
| **Prince Edward Island** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic particulate matter) |
| **Québec** | VECD (mg/m³) | 3 mg/m³ |
| **Québec** | VEMP (mg/m³) | 1 mg/m³ |
| **Saskatchewan** | OEL STEL (mg/m³) | 0.6 mg/m³ (thoracic fraction) |
| **Saskatchewan** | OEL TWA (mg/m³) | 0.2 mg/m³ (thoracic fraction) |
| **Yukon** | OEL STEL (mg/m³) | 1 mg/m³ |
| **Yukon** | OEL TWA (mg/m³) | 1 mg/m³ |

### Exposure Controls

**Appropriate Engineering Controls:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

**Personal Protective Equipment:** Gloves. Protective clothing. Protective goggles. Face shield. Insufficient ventilation: wear respiratory protection.

**Materials for Protective Clothing:** Acid-resistant clothing.

**Hand Protection:** Wear protective gloves.

**Eye Protection:** Chemical safety goggles and face shield.

**Skin and Body Protection:** Wear suitable protective clothing.

**Respiratory Protection:** If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

**Other Information:** When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on Basic Physical and Chemical Properties

| | | |
|---|---|---|
| **Physical State** | : | Liquid |
| **Appearance** | : | Clear, Colorless to Amber, Oily |
| **Odor** | : | Pungent |
| **Odor Threshold** | : | Not available |
| **pH** | : | 0.3 |
| **Evaporation Rate** | : | Not available |
| **Melting Point** | : | 10.56 °C (51.01 °F) |
| **Freezing Point** | : | Not available |
| **Boiling Point** | : | 290 °C (554 °F) |
| **Flash Point** | : | Not applicable |
| **Auto-ignition Temperature** | : | Not applicable |
| **Decomposition Temperature** | : | Not available |
| **Flammability (solid, gas)** | : | Not applicable |
| **Lower Flammable Limit** | : | Not applicable |
| **Upper Flammable Limit** | : | Not applicable |
| **Vapor Pressure** | : | 0.00027 - 0.16 kPa at 25 °C (77 °F) |
| **Relative Vapor Density at 20°C** | : | 3.4 (air = 1) |
| **Relative Density** | : | Not available |
| **Specific Gravity** | : | 1.84 g/l |
| **Solubility** | : | Water: Miscible |
| **Partition Coefficient: N-Octanol/Water** | : | Not available |
| **Viscosity** | : | Not available |

## SECTION 10: STABILITY AND REACTIVITY

**Reactivity:** May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction. This product may act as an oxidizer.

**Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).

**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid:** Extremely high or low temperatures and incompatible materials.

**Incompatible Materials:** Combustible materials. Reducing agents. Strong bases. Strong oxidizers. Metals. Water.

**Hazardous Decomposition Products:** Thermal decomposition generates: Corrosive vapors.

## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects - Product

**Acute Toxicity (Oral):** Not classified

**Acute Toxicity (Dermal):** Not classified

**Acute Toxicity (Inhalation):** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Causes severe skin burns and eye damage.

**pH:** 0.3

**Eye Damage/Irritation:** Causes serious eye damage.

**pH:** 0.3

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Carcinogenicity:** May cause cancer (Inhalation).

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Effects After Inhalation:** May be corrosive to the respiratory tract.

**Symptoms/Effects After Skin Contact:** Causes severe irritation which will progress to chemical burns.

**Symptoms/Effects After Eye Contact:** Causes permanent damage to the cornea, iris, or conjunctiva.

**Symptoms/Effects After Ingestion:** May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

**Chronic Symptoms:** Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans. Prolonged inhalation of fumes or mists may cause erosion of the teeth.

### Information on Toxicological Effects - Ingredient(s)

**LD50 and LC50 Data:**

| **Water (7732-18-5)** | |
|---|---|
| **LD50 Oral Rat** | > 90000 mg/kg |

| **Sulfuric acid (7664-93-9)** | |
|---|---|
| **LD50 Oral Rat** | 2140 mg/kg |
| **LC50 Inhalation Rat** | 510 mg/m³ (Exposure time: 2 h) |

| **Sulfuric acid (7664-93-9)** | |
|---|---|
| **IARC Group** | 1 |
| **OSHA Hazard Communication Carcinogen List** | In OSHA Hazard Communication Carcinogen list. |

| **Strong inorganic acid mists containing sulfuric acid** | |
|---|---|
| **National Toxicology Program (NTP) Status** | Known Human Carcinogens. |

## SECTION 12: ECOLOGICAL INFORMATION

### Toxicity

**Ecology - General:** Harmful to aquatic life.

| **Sulfuric acid (7664-93-9)** | |
|---|---|
| **LC50 Fish 1** | 500 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static]) |
| **LC50 Fish 2** | 42 mg/l (Exposure time: 96 h - Species: Gambusia affinis [static]) |

### Persistence and Degradability

| **Sulfuric Acid, 70-100%** | |
|---|---|
| **Persistence and Degradability** | Not established. |

### Bioaccumulative Potential

| **Sulfuric Acid, 70-100%** | |
|---|---|
| **Bioaccumulative Potential** | Not established. |

| **Sulfuric acid (7664-93-9)** | |
|---|---|
| **BCF Fish 1** | (no bioaccumulation) |

**Mobility in Soil** Not available

### Other Adverse Effects

**Other Information:** Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste Disposal Recommendations:** Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

**Additional Information:** Container may remain hazardous when empty. Continue to observe all precautions.

**Ecology - Waste Materials:** Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

## SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

| TRANSPORTATION CLASSIFICATION | DOT | TDG | IMDG | IATA |
|---|---|---|---|---|
| **Identification Number** | UN1830 | UN1830 | UN1830 | UN1830 |
| **Proper Shipping Name** | SULFURIC ACID | SULFURIC ACID | SULPHURIC ACID | SULPHURIC ACID |
| **Transport Hazard Class(es)** | 8 | 8 | 8 | 8 |
| |   |   |   |   |
| **Packing Group** | II | II | II | II |
| **Environmental Hazards** | **Marine Pollutant :** No | **Marine Pollutant** : No | **Marine Pollutant** : No | **Marine Pollutant**: N/A |
| **Emergency Response** | **ERG Number :** 137 | **ERAP Index:** 3 000 | **EMS:** F-A, S-B | **ERG code (IATA):** 8L |
| **Additional Information** | Not applicable | Not applicable | Not applicable | Not applicable |

## SECTION 15: REGULATORY INFORMATION

### US Federal Regulations

| Chemical Name (CAS No.) | CERCLA RQ | EPCRA 304 RQ | SARA 302 TPQ | SARA 313 |
|---|---|---|---|---|
| Sulfuric acid (7664-93-9) | 1000 lb | 1000 lb | 1000 lb | Yes |

**SARA 311/312**

| **Sulfuric Acid, 70-100%** |
|---|
| Immediate (acute) health hazard. Delayed (chronic) health hazard. Reactive hazard |

**US TSCA Flags** Not present

### US State Regulations

**California Proposition 65**

| Chemical Name (CAS No.) | Carcinogenicity | Developmental Toxicity | Female Reproductive Toxicity | Male Reproductive Toxicity |
|---|---|---|---|---|
| Sulfuric acid (7664-93-9) | Yes | No | No | No |
| Strong inorganic acid mists containing sulfuric acid | Yes | No | No | No |

**State Right-To-Know Lists**

| **Sulfuric acid (7664-93-9)** |
|---|
| U.S. - Massachusetts - Right To Know List - Yes<br>U.S. - New Jersey - Right to Know Hazardous Substance List - Yes<br>U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List - Yes<br>U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances - No<br>U.S. - Pennsylvania - RTK (Right to Know) List - Yes |

### Canadian Regulations

| **Sulfuric acid (7664-93-9)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List)<br>Not listed on the Canadian NDSL (Non-Domestic Substances List) |

### International Inventories/Lists

| Chemical Name (CAS No.) | Australia AICS | Turkey CICR | Korea ECL | EU EINECS | EU ELINCS | EU SVHC | EU NLP | Mexico INSQ |
|---|---|---|---|---|---|---|---|---|
| Sulfuric acid (7664-93-9) | Yes | No | Yes | Yes | No | No | No | No |

| Chemical Name (CAS No.) | China IECSC | Japan ENCS | Japan ISHL | Japan PDSCL | Japan PRTR | Philippines PICCS | New Zealand NZIOC | US TSCA |
|---|---|---|---|---|---|---|---|---|
| Sulfuric acid (7664-93-9) | Yes | Yes | No | Yes | No | Yes | Yes | Yes |

## SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Date of Preparation or Latest Revision** : 05/07/2018

### Revision Summary

| Section | Change | Date Changed |
|---|---|---|
| 16 | Data modified | 05/07/2018 |

**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR).

**GHS Full Text Phrases:**

| | |
|---|---|
| Aquatic Acute 3 | Hazardous to the aquatic environment - Acute Hazard Category 3 |
| Carc. 1A | Carcinogenicity Category 1A |
| Eye Dam. 1 | Serious eye damage/eye irritation Category 1 |
| Met. Corr. 1 | Corrosive to metals Category 1 |
| Skin Corr. 1A | Skin corrosion/irritation Category 1A |
| H290 | May be corrosive to metals |
| H314 | Causes severe skin burns and eye damage |
| H318 | Causes serious eye damage |
| H350 | May cause cancer |
| H402 | Harmful to aquatic life |

### NFPA 704

**NFPA Health Hazard** : 3
**NFPA Fire Hazard** : 0
**NFPA Reactivity Hazard** : 2
**NFPA Specific Hazards** : W


### HMIS Rating

**Health** : 3
**Flammability** : 0
**Physical** : 2
**PPE** See Section 8

### Abbreviations and Acronyms

AICS – Australian Inventory of Chemical Substances
ACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
ATE - Acute Toxicity Estimate
BCF - Bioconcentration factor
BEI - Biological Exposure Indices (BEI)
CAS No. - Chemical Abstracts Service number
CERCLA RQ - Comprehensive Environmental Response, Compensation, and Liability Act - Reportable Quantity
CICR - Turkish Inventory and Control of Chemicals
DOT – 49 CFR – US Department of Transportation – Code of Federal Regulations Title 49 – Transportation.
EC50 - Median effective concentration
ECL - Korea Existing Chemicals List
EINECS - European Inventory of Existing Commercial Chemical Substances
ELINCS - European List of Notified Chemical Substances
EmS - IMDG Emergency Schedule Fire & Spillage
ENCS - Japanese Existing and New Chemical Substances Inventory
LC50 - Median Lethal Concentration
LD50 - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effect Level
LOEC - Lowest-observed-effect Concentration
Log Pow - Octanol/water Partition Coefficient
NFPA 704 – National Fire Protection Association - Standard System for the Identification of the Hazards of Materials for Emergency Response
NIOSH - National Institute for Occupational Safety and Health
NLP - Europe No Longer Polymers List
NOAEL - No-Observed Adverse Effect Level
NOEC - No-Observed Effect Concentration
NZIOC - New Zealand Inventory of Chemicals
OEL - Occupational Exposure Limits
OSHA – Occupational Safety and Health Administration
PEL - Permissible Exposure Limits
PICCS - Philippine Inventory of Chemicals and Chemical Substances
PDSCL - Japan Poisonous and Deleterious Substances Control Law
PPE – Personal Protective Equipment

EPA – Environmental Protection Agency
EPCRA 304 RQ – EPCRA 304 Extremely Hazardous Substance Emergency Planning and Community Right-to-Know-Act – Reportable Quantity
ERAP Index – Emergency Response Assistance Plan Quantity Limit
ErC50 - EC50 in Terms of Reduction Growth Rate
ERG code (IATA) - Emergency Response Drill Code as found in the International Civil Aviation Organization (ICAO)
ERG No. - Emergency Response Guide Number
HCCL - Hazard Communication Carcinogen List
HMIS – Hazardous Materials Information System
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association – Dangerous Goods Regulations
IDLH - Immediately Dangerous to Life or Health
IECSC - Inventory of Existing Chemical Substances Produced or Imported in China
IMDG - International Maritime Dangerous Goods Code
INSQ - Mexican National Inventory of Chemical Substances
ISHL - Japan Industrial Safety and Health Law
PRTR - Japan Pollutant Release and Transfer Register
REL - Recommended Exposure Limit
SADT - Self Accelerating Decomposition Temperature
SARA - Superfund Amendments and Reauthorization Act
SARA 302 - Section 302, 40 CFR Part 355
SARA 311/312 - Sections 311 and 312, 40 CFR Part 370 Hazard Categories
SARA 313 - Section 313, 40 CFR Part 372
SRCL - Specifically Regulated Carcinogen List
STEL - Short Term Exposure Limit
SVHC – European Candidate List of Substance of Very High Concern
TDG – Transport Canada Transport of Dangerous Goods Regulations
TLM - Median Tolerance Limit
TLV - Threshold Limit Value
TPQ - Threshold Planning Quantity
TSCA – United StatesToxic Substances Control Act
TWA - Time Weighted Average
WEEL - Workplace Environmental Exposure Levels

*Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.*


Chemtrade NA GHS SDS 2015

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)<br>(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

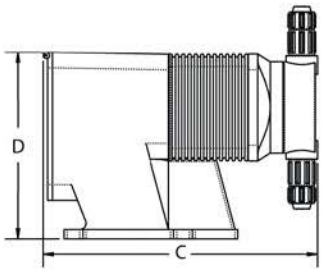
**Pre-Engineered Systems**

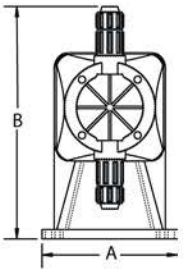
Pulsafeeder's Pre-Engineered Systems are designed to provide complete chemical feed solutions for all electronic metering applications. From stand alone simplex pH control applications to full-featured, redundant sodium hypochlorite disinfection metering, these rugged fabricated assemblies offer turn-key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

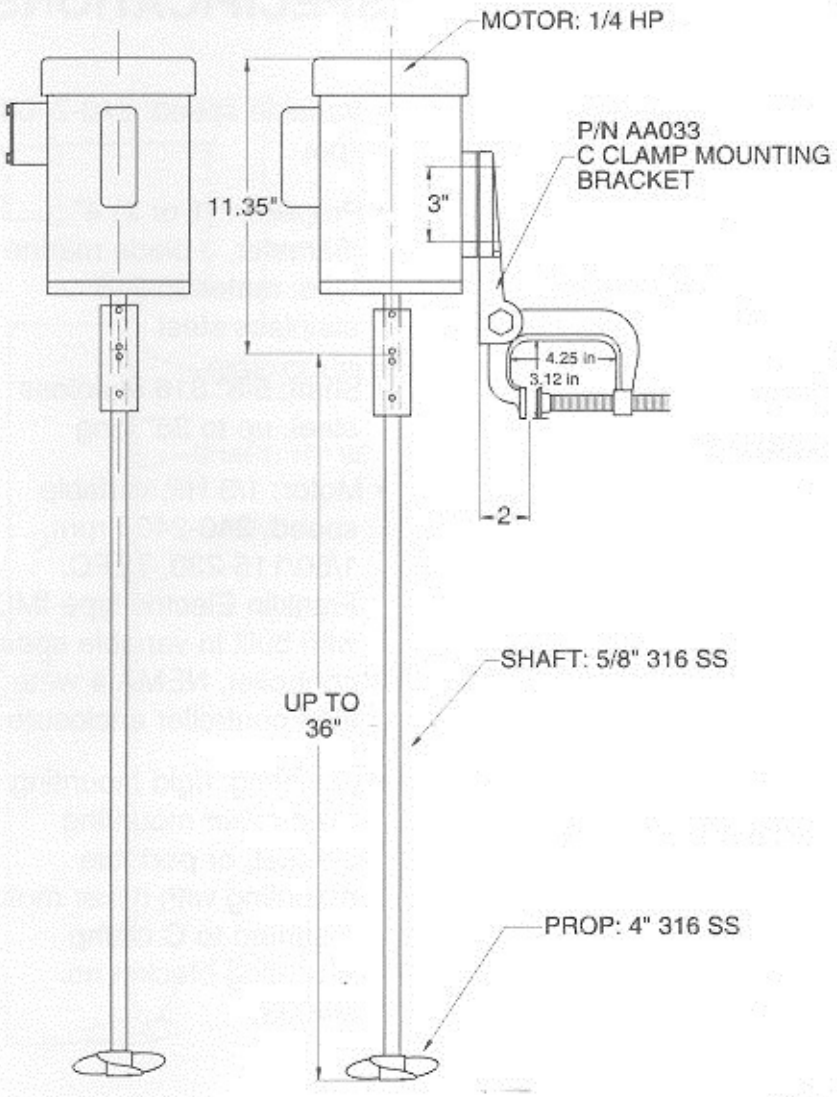
| Series HV Dimensions (inches) | | | | | |
|---|---|---|---|---|---|
| Model No. | A | B | C | D | Shipping Weight |
| LVB3 | 5.4 | 9.3 | 9.5 | 7.5 | 13 |
| LVF4 | 5.4 | 10.8 | 10.8 | 7.5 | 18 |
| LVG4 | 5.4 | 9.5 | 10.6 | 7.5 | 18 |
| LVG5 | 5.4 | 10.8 | 10.8 | 7.5 | 18 |
| LVH7 | 6.1 | 11.5 | 11 |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

# SAFETY DATA SHEET

**Revision date** 2018-06-11 **Revision number** 2

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product identifier**

**Product name** Redux E50

**Other means of identification**

**Product code**
**Synonyms** Water And Wastewater Treatment Coagulant/Flocculant

**Recommended use of the chemical and restrictions on use**

**Recommended use [RU]** No information available
**Uses advised against** No information available

**Details of the supplier of the safety data sheet**

**Supplier**

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, Massachusetts 01453
Tel: (774) 450-7177
Hours: Monday-Friday 9:00-5:00 EST

**Emergency telephone number**

**24 Hour Emergency Phone Number** CHEMTREC: (800) 424-9300
Outside USA - +1 (703) 527-3887 collect calls accepted

**Contact Point** info@reduxtech.com

## 2. HAZARDS IDENTIFICATION

**Classification**

**OSHA Regulatory Status**
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

| | |
|---|---|
| **Skin corrosion/irritation** | Category 2 |
| **Serious eye damage/eye irritation** | Category 2 |
| **Corrosive to metals** | Category 1 |

**GHS Label elements, including precautionary statements**

**EMERGENCY OVERVIEW**

| Physical state | Color | Appearance | Odor |
|---|---|---|---|
| liquid | colorless to yellow | clear | no appreciable odor |

**WARNING**

**Hazard statements**
Causes skin irritation
Causes serious eye irritation
May be corrosive to metals

**Precautionary Statements - Prevention**
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container

**Precautionary Statements - Response**
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
Absorb spillage to prevent material damage

**Precautionary Statements - Storage**
Store in corrosive resistant container with a resistant inner liner

**Other information**
• May be harmful in contact with skin

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS-No | weight-% | TRADE SECRET |
|---|---|---|---|
| Trade Secret Ingredient | PROPRIETARY | 45 - 55% | * |

*The exact percentage (concentration) of composition has been withheld as a trade secret

## 4. FIRST AID MEASURES

### First Aid Measures

**Eye contact**
Immediately flush with plenty of water for at least 20 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek immediate medical attention.

**Skin contact**
Immediately wash thoroughly with soap and water, remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention if irritation should develop.

**Ingestion**
Seek medical attention immediately. Give large amounts of water to drink. If vomiting should occur spontaneously, keep airway clear. Never give anything by mouth to an unconscious person.

**Inhalation**
Remove to fresh air.

### Most important symptoms and effects, both acute and delayed

**Acute effects**
Possible eye, skin and respiratory tract irritation.

**Chronic effects**
May aggravate existing skin, eye, and lung conditions. Persons with kidney disorders have an increased risk from exposure based on general information found on aluminum salts.

### Indication of any immediate medical attention and special treatment needed

**Note to physicians**
Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents. Note: Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

## 5. FIRE-FIGHTING MEASURES

### Extinguishing media

**Suitable extinguishing media**
Water Spray, Carbon Dioxide, Foam, Dry Chemical.

**Extinguishing media which must not be used for safety reasons**
No information available

### Special hazards arising from the substance or mixture

**Special Hazard**
May produce hazardous fumes or hazardous decomposition products.

### Advice for firefighters

**Firefighting measures**
Product is a water solution and nonflammable. In a fire, this product may build up pressure and rupture a sealed container; cool exposed containers with water spray. Use self-contained breathing apparatus in confined areas; avoid breathing mist or spray.

**Special protective equipment for firefighters**
Not determined

**Explosion data**

**Sensitivity to Mechanical Impact**
None.

**Sensitivity to Static Discharge**
None.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions**
Wear suitable protective clothing and gloves.

**Environmental precautions**

**Environmental precautions**
Do not permit run-off to get into sewers or surface waterways.

**Methods and material for containment and cleaning up**

**Methods for containment**
Prevent further leakage or spillage if safe to do so. Dike to collect large liquid spills.

**Methods for cleaning up**
Clear spills immediately. Contain large spill and remove using a vacuum truck. Soak up small spills with inert absorbent material and place in a labeled waste container for disposal. Ventilate area of leak or spill. Spills of solution are extremely slippery so all residue must be removed promptly.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Advice on safe handling**
Keep container closed when not in use
Keep away from heat and open flame.
Avoid contact with eyes, skin and clothing
Wash thoroughly after handling
Wear chemical splash goggles, gloves, and protective clothing when handling.
Avoid breathing vapor or mist
Use with adequate ventilation and employ respiratory protection where mist or spray may be generated.
FOR INDUSTRIAL USE ONLY.

**Conditions for safe storage, including any incompatibilities**

**Technical measures and storage conditions**
Do not store in unlined metal containers.
Product may slowly corrode iron, brass, copper, aluminum, mild steel, and stainless steel.
Store in a cool, dry place away from direct heat.
Keep in tightly closed container.

**Incompatible products**
Oxidizing agents.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

**Appropriate engineering controls**

**Engineering controls**
Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details. If there are no applicable or established exposure limit requirements or guidelines, general ventilation should be sufficient.

**Individual protection measures, such as personal protective equipment**

**Eye/face Protection**
Wear chemical splash goggles and face shield (when eye and face contact is possible due to splashing or spraying of material).

**Hand Protection**
Appropriate chemical resistant gloves should be worn.

**Skin and body protection**
Standard work clothing and work shoes.

**Respiratory protection**
If exposures exceed the PEL or TLV, use NIOSH/MSHA approved respirator in accordance with OSHA Respiratory Protection Requirements under 29 CFR 1910.134.

**Other personal protection data**
Eyewash fountains and safety showers must be easily accessible.

**Hygiene measures**
Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | |
|---|---|
| **Physical state** | liquid |
| **Color** | colorless to yellow |
| **Appearance** | clear |
| **Odor** | no appreciable odor |
| **Odor threshold** | No information available |

| Property | Values | Remarks / Method |
|---|---|---|
| **pH** | 3.5 | as is |
| **Melting / freezing point** | -7 °C / 19 °F | No information available |
| **Boiling point / boiling range** | No information available | No information available |
| **Flash point** | Not applicable | No information available |
| **Evaporation rate** | No information available | No information available |

| | | |
|---|---|---|
| **Flammability (solid, gas)** | Not applicable | No information available |
| **Flammability Limit in Air** | | |
| **Upper flammability limit** | Not applicable | No information available |
| **Lower flammability limit** | Not applicable | No information available |
| **Vapor pressure** | No information available | No information available |
| **Vapor density** | No information available | No information available |
| **Specific gravity** | 1.33 - 1.35 | No information available |
| **Solubility (water)** | Soluble | No information available |
| **Solubility in other solvents** | No information available | No information available |
| **Partition coefficient: n-octanol/water** | No information available | No information available |
| **Autoignition temperature** | Not applicable | No information available |
| **Decomposition temperature** | No information available | No information available |
| **Kinematic viscosity** | No information available | No information available |
| **Dynamic viscosity** | < 100 cps @ 20 °C | No information available |

**Other information**

| | |
|---|---|
| **Density** | 11.0 - 11.3 lb/gal |
| **Bulk Density** | No information available |
| **Explosive properties** | No information available. |
| **Oxidizing properties** | No information available |
| **Softening point** | No information available |
| **Molecular weight** | No information available |
| **Volatile organic compounds (VOCs) content** | No information available |
| **Percent Volatile, wt.%** | 40 - 50% |

## 10. STABILITY AND REACTIVITY

**Reactivity**

**Reactivity**
No data available.

**Chemical stability**

**Chemical stability**
Stable.

**Possibility of hazardous reactions**

**Possibility of hazardous reactions**
None under normal processing.

**Hazardous polymerization**
No.

### Conditions to avoid

**Conditions to avoid**
None

### Incompatible materials

**Materials to avoid**
Oxidizing agents.

### Hazardous decomposition products

**Hazardous decomposition products**
Thermal decomposition may release toxic and/or hazardous gases such as $Cl_2$ and HCl.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Eye contact**
May cause moderate eye irritation that can become severe with prolonged contact. Prolonged exposure to Aluminum salts may cause conjunctivitis.

**Skin contact**
May be harmful in contact with skin. Prolonged and/or repeated contact may cause skin irritation.

**Ingestion**
May cause irritation of the mouth, throat and stomach. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Inhalation**
Inhalation of mist or vapor may cause respiratory tract irritation.

### Acute toxicity - Product Information

**Oral LD50** No information available

**Dermal LD50** No information available

**Inhalation LC50** No information available

### Acute toxicity - Component Information

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

### Information on toxicological effects

**Symptoms**
No information available.

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Skin corrosion/irritation**
Irritating to skin

**Serious eye damage/eye irritation**
Causes serious eye irritation

**Sensitization**
No information available

**Germ cell mutagenicity**
No information available

**Carcinogenicity**
This product does not contain any components in concentrations greater than or equal to 0.1% that are listed as known or suspected carcinogens by NTP, IARC, ACGIH, or OSHA.

**Reproductive toxicity**
No information available

**Specific target organ toxicity - Single exposure**
No information available.

**Specific target organ toxicity - Repeated exposure**
No information available

**Aspiration hazard**
No information available.

**Numerical measures of toxicity - Product Information**

**The following values are calculated based on chapter 3.1 of the GHS document**

| | |
|---|---|
| **ATEmix (oral)** | 18374 mg/kg |
| **ATEmix (dermal)** | 4004 mg/kg |

**Other information**
Conclusions are drawn from sources other than direct testing.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Aquatic toxicity - Product Information**

| | |
|---|---|
| **Fish** | LC 50 (96 hour, static) 776.4 mg/L *Pimephales promelas* (Fathead Minnow) [1]<br>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]<br>NOEC (7 day chronic, static) 200 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) | -- |

**Persistence and degradability**

**Persistence and degradability**
No information available

**Bioaccumulative potential**

**Bioaccumulative potential**
No information available.

**Mobility**

**Mobility**
No information available

**Results of PBT and vPvB assessment**

**PBT and vPvB assessment**
No information available

**Other adverse effects**

**Other information**
[1] Generated from tests conducted by ECT-Superior Laboratories May 2010

## 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Disposal of wastes**
Do NOT mix with other chemical wastes. Do not put solutions containing this product into sewer systems. Dispose of product in an approved chemical waste landfill or incinerate in accordance with applicable Federal, state and local regulations. Do not re-use empty containers.

**Contaminated packaging**
Since empty containers retain product residue, follow label warnings even after container is emptied.

## 14. TRANSPORT INFORMATION

**DOT**

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

**ICAO/IATA**

Regulated

| | |
|---|---|
| **UN number** | UN3264 |
| **Proper shipping name** | Corrosive Liquid, Acidic, Inorganic, N.O.S. (Polyaluminum Chloride Solution) |
| **Hazard class** | 8 |
| **Packing group** | III |
| **ERG Code** | 8L |

**IMDG**

Regulated

| | |
|---|---|
| **UN number** | UN3264 |
| **Proper shipping name** | Corrosive Liquid, Acidic, Inorganic, N.O.S. (Polyaluminum Chloride Solution) |
| **Hazard class** | 8 |
| **Packing group** | III |
| **EmS** | F-A, S-B |

**Harmonized Tariff Number** 2827.32

## 15. REGULATORY INFORMATION

**International Inventories**

**TSCA (United States)**
All ingredients are on the inventory or exempt from listing

**Australia (AICS)**
All ingredients are on the inventory or exempt from listing

**Canada (DSL)**
All ingredients are on the inventory or exempt from listing

**Canada (NDSL)**
None of the ingredients are on the inventory.

**China (IECSC)**
All ingredients are on the inventory or exempt from listing

**EINECS (European Inventory of Existing Chemical Substances)**
All ingredients are on the inventory or exempt from listing

**ELINCS (European List of Notified Chemical Substances)**
None of the ingredients are on the inventory.

**ENCS (Japan)**
All ingredients are on the inventory or exempt from listing

**South Korea (KECL)**
All ingredients are on the inventory or exempt from listing

**Philippines (PICCS)**
All ingredients are on the inventory or exempt from listing

**Legend**

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**AICS** - Australian Inventory of Chemical Substances
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**IECSC** - China Inventory of Existing Chemical Substances
**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
**ENCS** - Japan Existing and New Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**U.S. Federal Regulations**

**CERCLA**
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**CWA (Clean Water Act)**
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**SARA 311/312 Hazard Categories**

| | |
|---|---|
| Acute health hazard | Yes |
| Chronic health hazard | No |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive hazard | No |

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

**U.S. State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

This product does not contain any substances regulated under applicable state right-to-know regulations

## 16. OTHER INFORMATION

| | | | | |
|---|---|---|---|---|
| **NFPA Rating** | Health - 1 | Flammability - 0 | Instability - 0 | Special Hazard - |
| **HMIS Rating** | Health - 1 | Flammability - 0 | Physical hazard - 0 | Personal protection - B |

**Product code**

**Revision date** 2015-03-12

**Revision number** 1

**Disclaimer**

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.**

**End of Safety Data Sheet**

# SAFETY DATA SHEET

## I. Chemical Product and Company Identification

Product Name: Nonionic / Anionic Polymer
Product #s: LRT- 800 Series Polymers

Distributor: Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774-450-7177
Fax: 885-835-0617
Email: plockwood@lrt-llc.net

For Chemical Emergency - Spill, Leak, Fire, Exposure or Accident
Call **CHEMTEL** - Day or Night – 1800-255-3924

## II. Composition and Ingredient Information

| Components: | CAS #: |
|---|---|
| Anionic Polyacrylamide | 25085-02-3 |
| Permissible Exposure Limit (PEL): | No information available. |
| Threshold Limit Value (TLV): | Information not available. |

## III. Hazard Identification

Primary Routes of Exposure: Skin Contact - Eye Contact - Inhalation

Skin Contact: May cause irritation, especially after prolonged or repeated contact.

Eye Contact: Dust contact and solution may cause irritation.

Ingestion: May cause discomfort or gastrointestinal disturbance. Low oral toxicity.

Inhalation: Dust contact and solution may cause irritation.

Unusual Chronic Toxicity: None Known.

## IV. First Aid Measures

Skin Contact: Flush with plenty of soap and water for at least 15 minutes. If irritation persists, get medical attention.

Eyes Contact: Immediately flush with water, continuing for 15 minutes. Immediately contact a physician for additional treatment.

Ingestion: If conscious, immediately give 2 to 4 glasses of water, and induce vomiting by touching finger to back of throat or giving syrup of Ipecac.

CAUTION: If unconscious, having breathing or in convulsions, do not induce vomiting or give water.

Inhalation: Remove to fresh air.

**V. Fire-Fighting Measures**

Flammability Classification: NFPA - Minimal - Will not burn under normal conditions.

Flash Point: Not flammable.

Flammable and Explosive Limits: UEL: ND LEL: ND

Hazardous Combustion Byproducts:

Thermal decomposition expected to produce carbon monoxide, carbon dioxide, and various nitrous oxides and some HCl vapors.

Extinguishing Media: Foam - Carbon Dioxide - Dry Chemical

**AVOID USING WATER - MAY CAUSE EXTREMELY SLIPPERY CONDITIONS.**

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus.
Solutions of product are extremely slippery.

Unusual Fire and Explosion Hazards: Material and its solutions are extremely slippery.

**VI. Accidental Release Measures**

Procedures: Sweep up or shovel into metal or plastic container. Do not use water to clean area; product is very slippery when wet.

Waste Disposal: Incineration and/or disposal in a chemical landfill. Disposer must comply with Federal, State, and Local disposal or discharge laws.

**VII. Handling and Storage** Avoid contact with skin, eyes, or clothing.
Do not inhale mist if formed.
Use normal personal hygiene and housekeeping.
Store in a cool dry place.

**VIII. Exposure Controls and Personal Protection**

Eye Protection: Safety glasses for normal handling conditions.
Splash-proof goggles when handling solutions.
Do not wear contact lens.

Hand Protection: Rubber gloves.

Ventilation: Local exhaust - if dusting occurs. Natural ventilation adequate in absence of dust.

Respiratory Protection: If dusty conditions are encountered, wear NIOSH approved respirator.

Other Protection: Eye wash recommended, full work clothing, add protective rubber clothing if splashing or repeated contact with solution is likely.

**IX. Physical and Chemical Properties**

| | |
|---|---|
| Appearance | White granular |
| State | Solid |
| Specific Gravity (Water = 1) | 0.8 - 1.0 |
| Solubility in Water | Complete |

**X. Stability and Reactivity**

Stability: Product is stable as supplied.

Incompatibility: Oxidizing Agents may cause exothermic reaction.

Hazardous Decomposition or Byproducts:

Thermal decomposition expected to produce carbon oxides, and various nitrous oxides.

Hazardous Polymerization: Will not occur.

**XI. Toxicological Information** Not listed as a carcinogen by IARC, NTP, OSHA or ACGIH.

**XII. Ecological Information**

**XIII. Disposal Considerations**

Incineration and/or disposal in chemical landfill. Disposer must comply with federal, state, and local disposal or discharge laws.

RCRA Status of Unused Material if Discarded: Not a hazardous waste.

Hazardous Waste Number: N/A

**XIV. Transport Information**

Not DOT regulated. Not a RCRA hazardous waste.

Label Instructions: Signal Word: **"Caution! Products are extremely slippery! "**

**XV. Regulatory Information**

Reportable Quantity (EPA 40 CFR 302): N/A

Threshold Planning Quantity (EPA 40 CFR 355): N/A

Toxic Chemical Release Reporting (EPA 40 CFR 372): N/A

SARA TITLE 3: Section 311 Hazard Categorizations (40CFR 370): N/A

SARA TITLE 3: Section 313 Information (40CFR 372): N/A

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Information (40CFR 302.4) N/A

**US TSCA: Product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C.**

**XVI. Other Information**

| | | Scale |
|---|---|---|
| Health | 0 | 4 = Severe |
| Flammability | 1 | 3 = Serious |
| Reactivity | 0 | 2 = Moderate |
| Personal Protection | **F** | 1 = Slight |
| | | 0 = Insignificant |

Personal Protective Equipment Guide

A = Safety Glasses

B = Safety Glasses, Gloves

C = Safety Glasses, Gloves, Apron

D = Gloves, Apron, Face shield

E = Safety Glasses, Gloves, and Dust Respirator

F = Safety Glasses, Gloves, Apron and Dust Respirator

G = Safety Glasses, Gloves, and Vapor Respirator

H = Splash Goggles, Gloves, Apron, Vapor Respirator

I = Safety Glasses, Gloves, and Dust & Vapor Respirator

J = Splash Goggles, Gloves, Apron, and Dust & Vapor Respirator

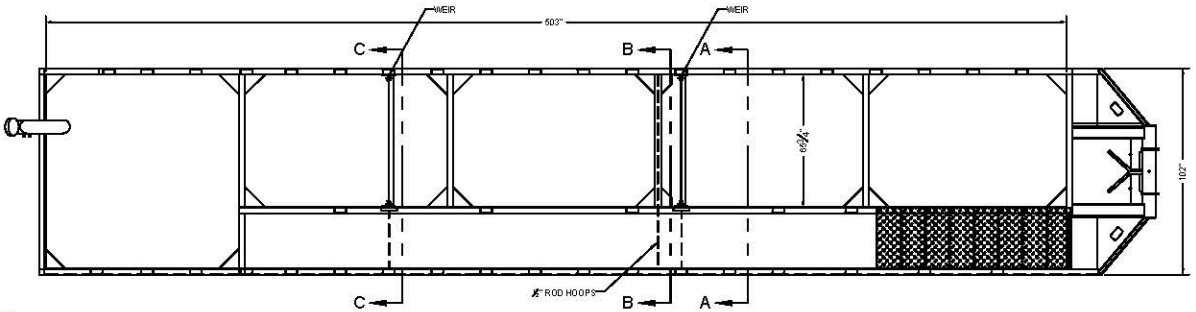
K = Air Line Hood/Mask, Gloves, Full Suit, Boots

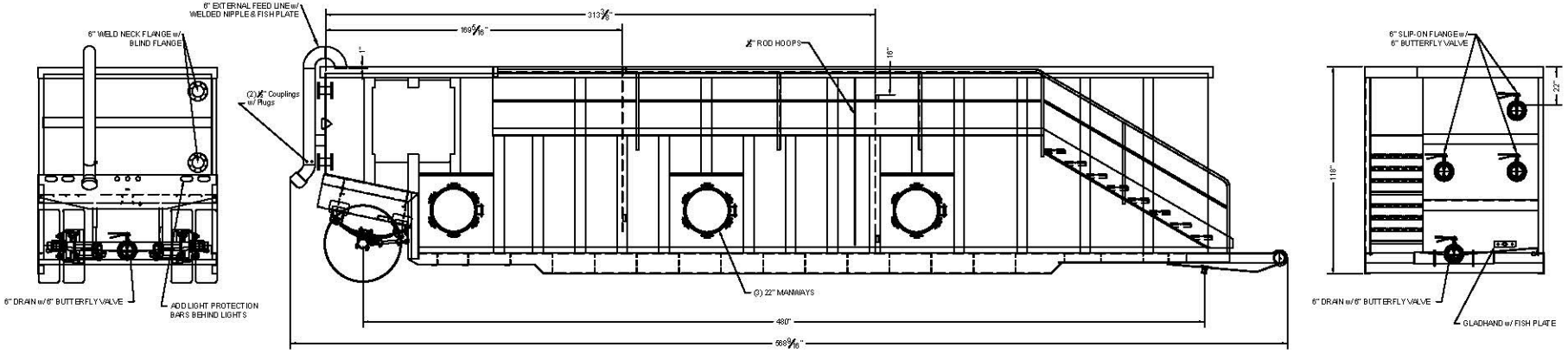
X = Ask supervisor for special handling instructions

---

**ABBREVIATIONS:**

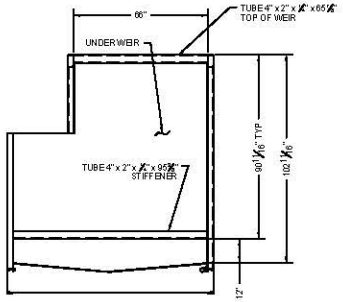
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissible Exposure Limit
TWA - Time Weighted Average
STEL - Short-Term Exposure Limit
ANSI - American National Standard Institute
MSHA - Mine Safety and Health Administration
NIOSH - National Institute for Occupational Safety & Health
NA - Not Applicable
NE - Not Established
NR - Not Required
PPE - Personal Protective Equipment
LEL - Lower Exposure Level
UEL - Upper Exposure Level



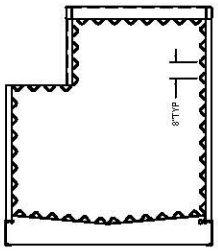




## STANDARD SPECIFICATION

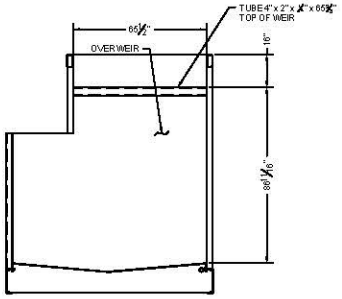
CAPACITY: .... 18,480 GALLONS (440 BBL)
SIDE SHEETS: .... 1/4" A36 PLATE
FRONT SHEET: .... 1/4" A36 PLATE
REAR SHEET: .... 1/4" A36 PLATE
FLOOR: .... 1/4" A36 PLATE
MAIN FLOOR RAILS: .... 12" x 20.7# STRUCTURAL CHANNEL
FLOOR CROSSMEMBERS: .... 1/4" A36 PLATE
SIDE STAKES: .... ONE PIECE 3/16" A36 PLATE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



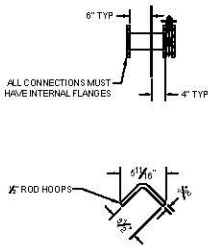

SECTION VIEW "C-C"




SECTION VIEW "B-B"




SECTION VIEW "A-A"

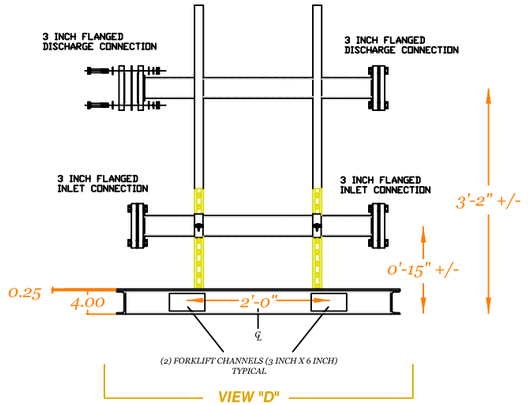



NOTE:
This drawing is a representation baseline for this model of tank. Variations between this drawing and the actual equipment do exist, primarily with appurtenance locations, sizes and quantities.

# 18,000 gal. Weir Tank

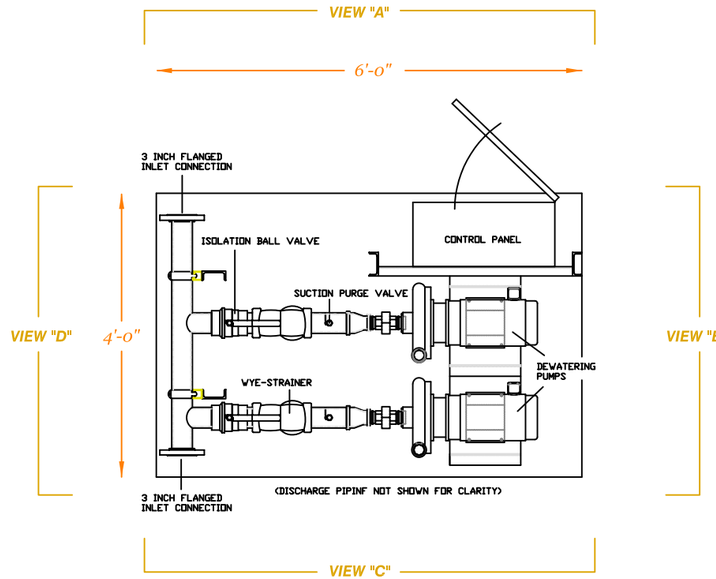
**Lockwood Remediation Technologies, LLC**

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



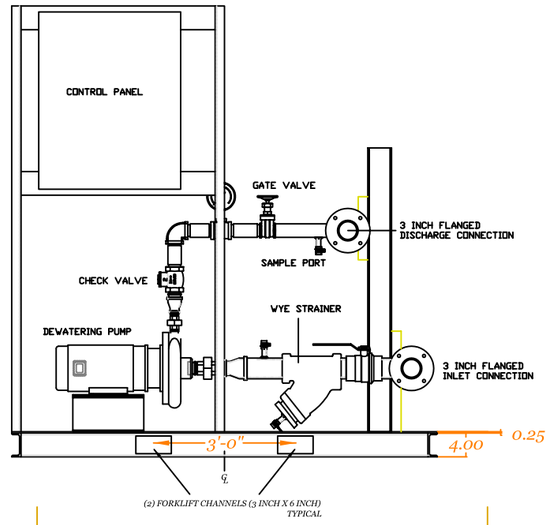

## 5 HP DEWATERING PUMPSKID

### ELEVATIONAL VIEW



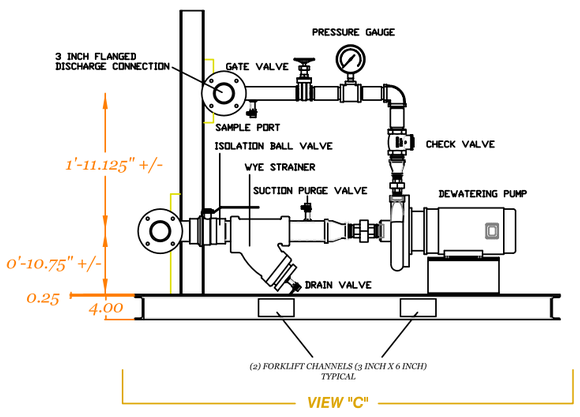

## 5 HP DEWATERING PUMPSKID

### TOP VIEW



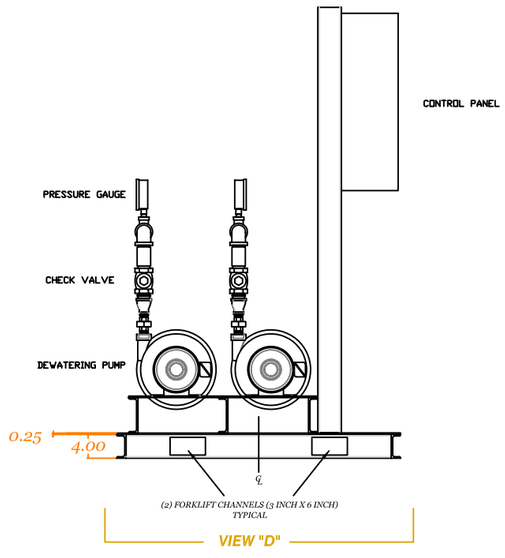

## 5 HP DEWATERING PUMPSKID

### ELEVATIONAL VIEW




## 5 HP DEWATERING PUMPSKID

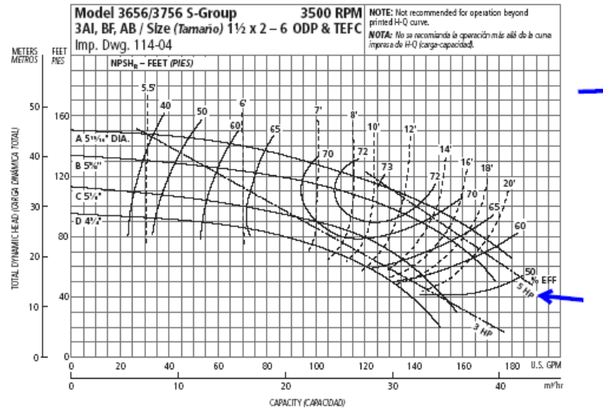
### ELEVATIONAL VIEW




## 5 HP DEWATERING PUMPSKID

### ELEVATIONAL VIEW

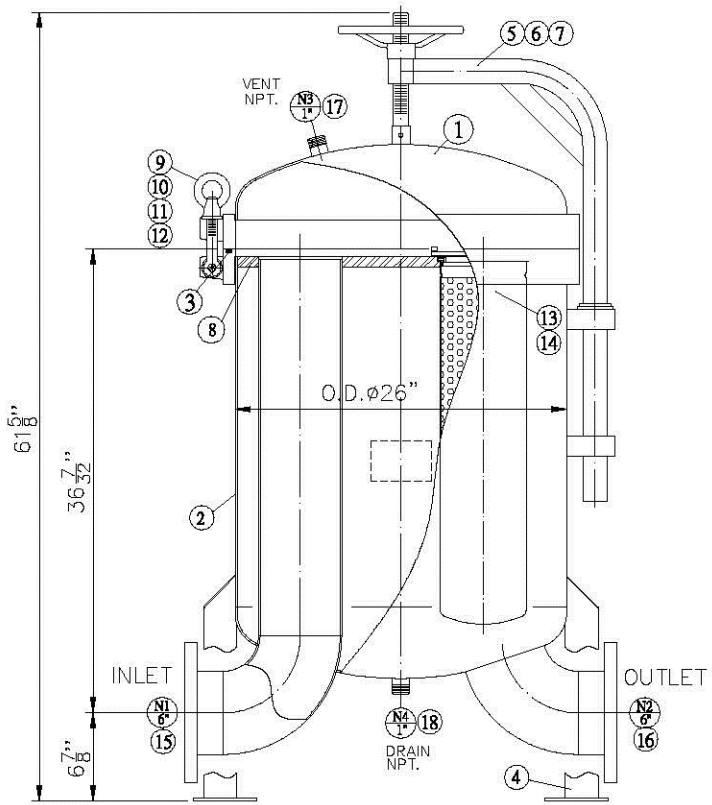
**Performance Curves – 60 Hz, 3500 RPM**
*Curvas de desempeño – 60 Hz, 3500 RPM*



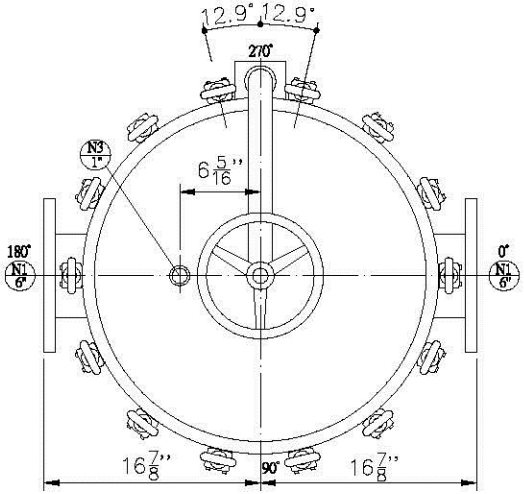

| Optional Impeller / Impulsor optativo | |
|---|---|
| Ordering Code / Código de pedido | Dia. / Diá. |
| A | 5 11/16" |
| B | 5⅜" |
| C | 5⅛ |
| D | 4⅞ |

NOTE: Pump will pass a sphere to 5/16" diameter.

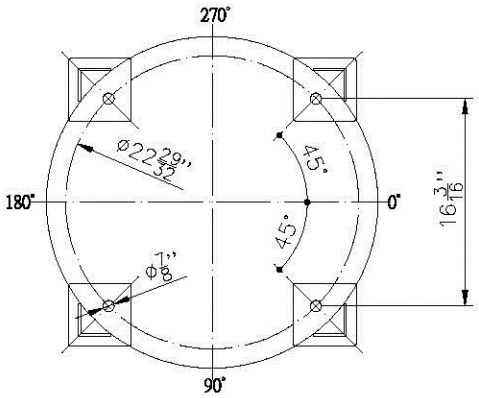
NOTA: *La bomba dejará pasar una esfera de hasta 5/16 de pulgada de diámetro.*




SIDE VIEW




TOP VIEW




ANCHOR

# BILL OF MATERIALS
(QUANTITY PER UNIT)

PROD ORDER_____S.O_____ MFG. SERIAL NO._____

CUSTOMER_____ DESIGN __150__ PSIG __90__ °C

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

CUST. P.O._____ HYDROSTATIC TESTED _225_ PSIG

CUST.EQUIP_____ CODE _____

CODE STAMP_____ N.B._____

NO OF UNITS _____ SCH SHIP DATE _____

WEIGHT EMPTY _____ KG. FULL _____ KG

| NO. | DESCRIPTION | MATERIAL | UNIT | QUAN. | PART NO. |
|---|---|---|---|---|---|
| 1 | FILTER COVER | 304 | | 1 | |
| 2 | FILTER SHELL | 304 | | 1 | |
| 3 | GASKET | EPDM | | 1 | |
| 4 | LEG WELDMENT | 304 | | 4 | |
| 5 | DAVIT HANDWHEEL | 304 | | 1 | |
| 6 | DAVIT SCREW | 304 | | 1 | |
| 7 | DAVIT ARM | 304 | | 1 | |
| 8 | SEPARATE PLATE | 304 | | 1 | |
| 9 | EYENUT | 304 | | 14 | |
| 10 | WASHER | 304 | | 14 | |
| 11 | EYEBOLT | 304 | | 14 | |
| 12 | BOLT SUPPORT | 304 | | 14 | |
| 13 | BASKET | 304 | | 6 | |
| 14 | BAG–LOCK DEVICE | 304 | | 6 | |
| 15 | INLET 6" ANSI 150B RF | 304 | | 1 | |
| 16 | OUTLET 6" ANSI 150B RF | 304 | | 1 | |
| 17 | VENT NPT 1" | 304 | | 1 | |
| 18 | DRAIN NPT 1" | 304 | | 1 | |

Lockwood Remediation Technologies, LLC
89 Crawford Street
Leominster, MA

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

| PROJECT NO. | ORDER NO. | ITEM NO. |
|---|---|---|
| | | |

DATE: UNIT: INCH

# *Polyester Liquid Filter Bag*

## *Features*

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

## *Applications*

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

## *Sizes*

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

## *Micron Ratings*

Available fibers range from 1 to 1500 microns

## *Options*

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

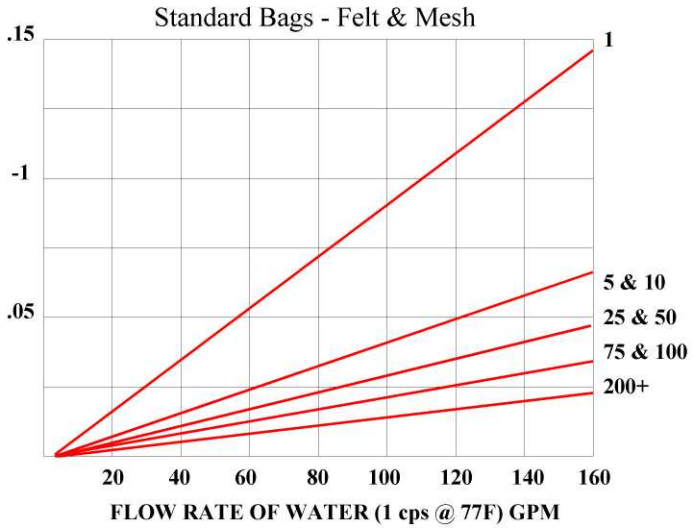
## *Optional Filter Media*

**Felt:** Nomex, Polyester, Polypropylene

**Monofilament:** Nylon, Polyester, Polypropylene

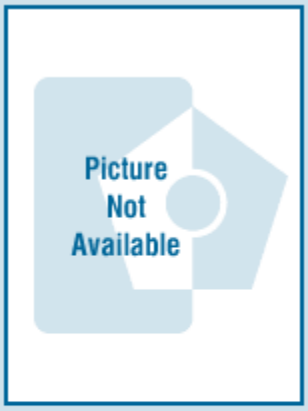
**Multifilament**: Nylon, Polyester

**Polypropylene:** Oil Removal



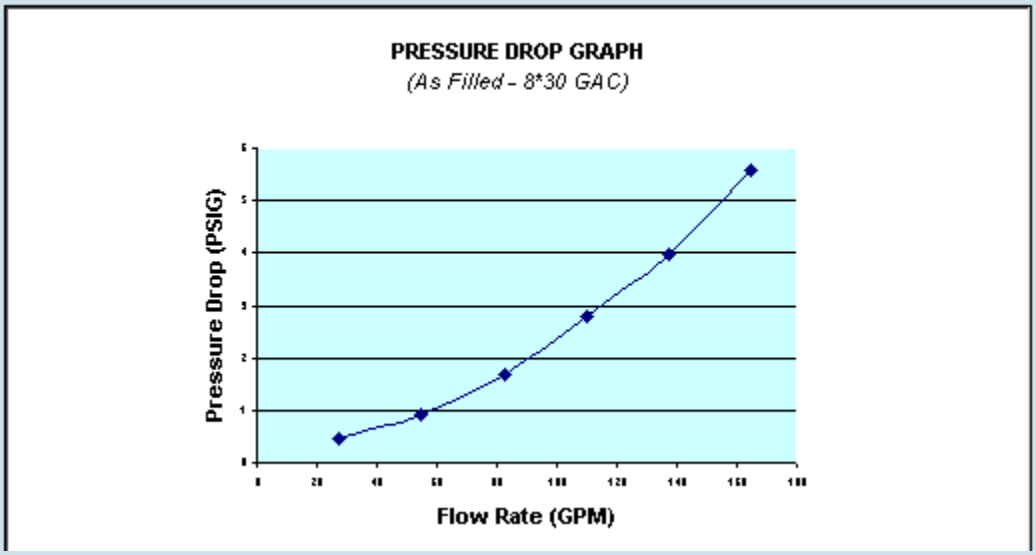
89 Crawford Street
Leominster, Massachusetts 01453
Tel: 774.450.7177
Fax: 888.835.0617
www.lrt-llc.net

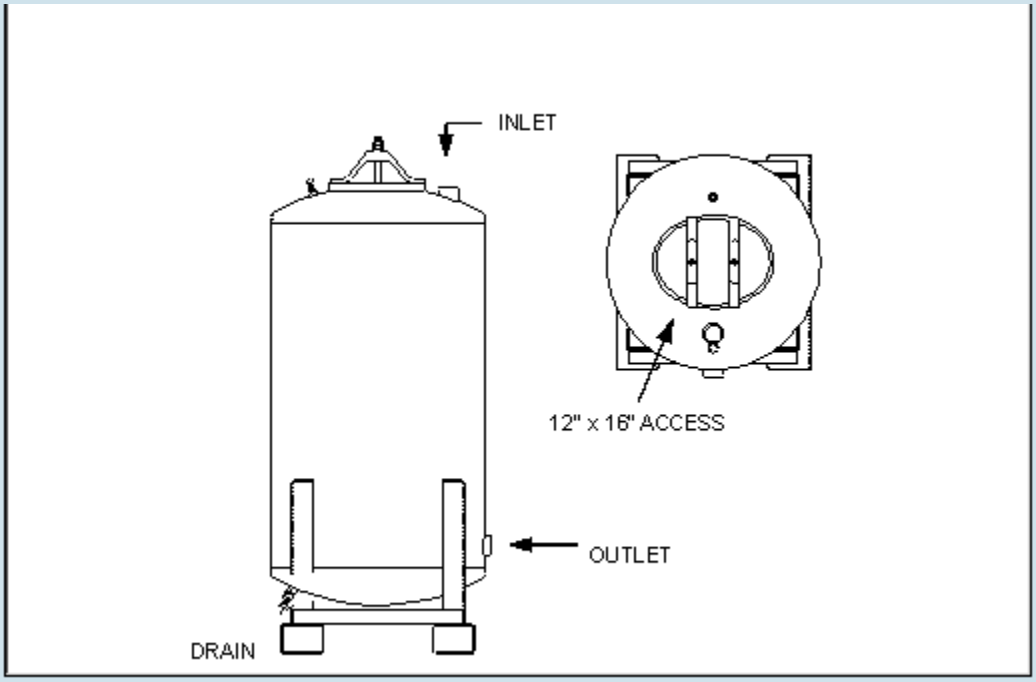
# HPAF SERIES FILTERS
# MODEL HPAF-3000




The HPAF-3000 filter is a media filter vessel designed to treat liquid streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. Some applications include:

- Dissolved Organic Removal (Activated Carbon)
- Suspended Solids Removal (Sand Filter)
- Dissolved Minerals (Softener Resin)
- Oil and Grease Removal (Organo-Clays)
- Dissolved and Precipitated Metals Removal
- Special Organics (Resin/Carbon Blend)
- Catalytic Reactor (Chlorine and Peroxide Removal)
- Bio-Remediation Contactor Unit






| HPAF-3000 SPECIFICATIONS | | | |
|---|---|---|---|
| Overall Height | 8'11" | Vessel/Internal Piping Materials | CS (SA-36) / SCH 40 PVC |
| Diameter | 60" | Internal Coating | Polyamide Epoxy Resin |
| Inlet / Outlet (FNPT) | 3" | External Coating | Epoxy Mastic |
| Drain / Vent (FNPT) | 1" / 1/2" | Maximum Pressure / Temp | 75 PSIG / 140° F |
| GAC Fill (lbs) | 3,000 | Cross Sectional Bed Area | 19.5 $FT^2$ |
| Shipping / Operational Weight (lbs) | 3,525/10,635 | Bed Depth/Volume | 5.5 FT / 107 $FT^3$ |

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Fax: 888.835.0617
www.lrt-llc.net

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

## GENERAL DESCRIPTION

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

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

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

RESINTECH INC
INNOVATIONS IN ION EXCHANGE

# CGS

**CATION EXCHANGE RESIN**
**SOFTENING GRADE**
**Na FORM**

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

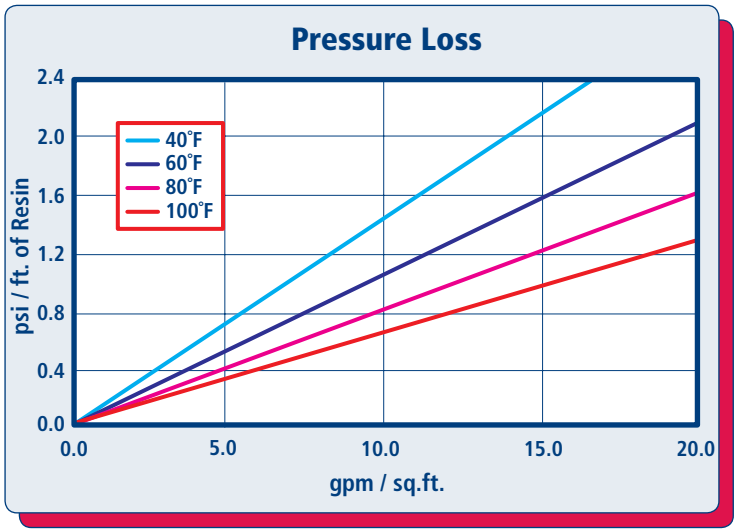
**NSF/ANSI 44-61 CERTIFIED FOR MATERIAL SAFETY**

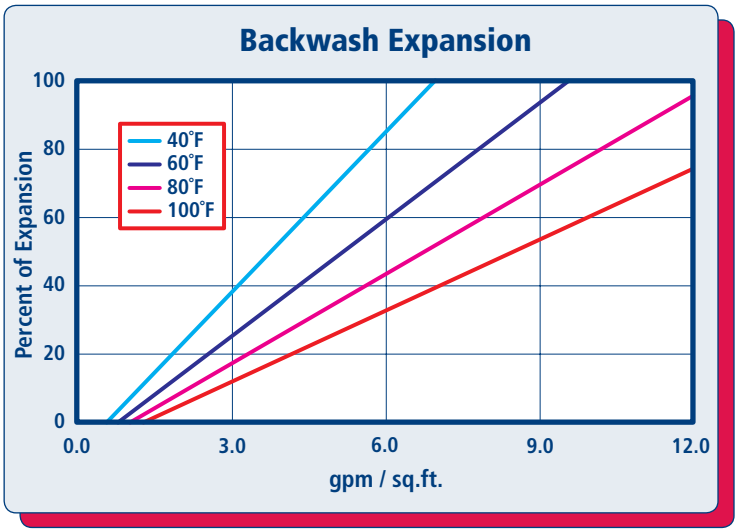
## FEATURES & BENEFITS

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

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

## HYDRAULIC PROPERTIES




### PRESSURE LOSS

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

### BACKWASH

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

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

# RESINTECH® CGS

## PHYSICAL PROPERTIES

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

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

## SUGGESTED OPERATING CONDITIONS

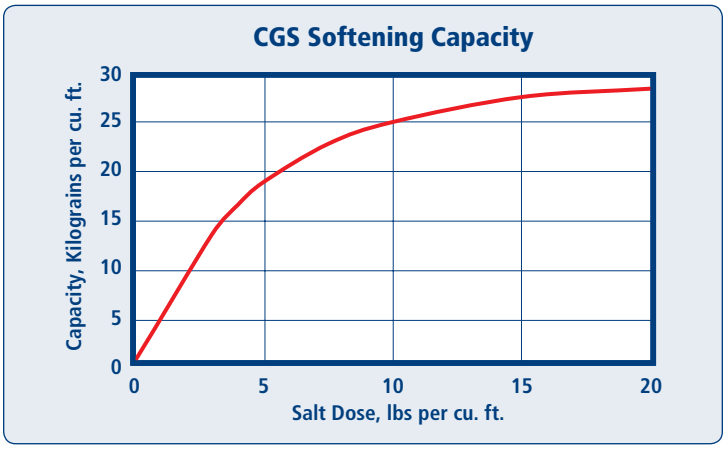
| | |
|---|---|
| Maximum continuous temperature | |
| Sodium form | 250˚F |
| Minimum bed depth | 24 inches |
| Backwash expansion | 25 to 50 percent |
| Maximum pressure loss | 25 psi |
| Operating pH range | 0 to 14 SU |
| Regenerant Concentration | |
| Salt cycle | 10 to 15 percent NaCl |
| Regenerant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

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

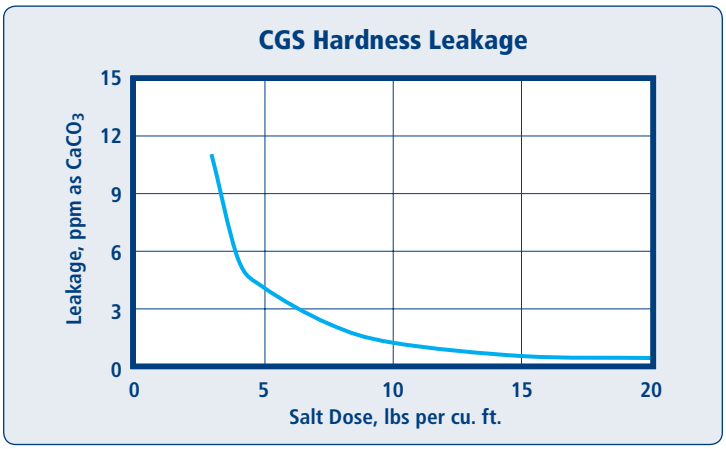
## APPLICATIONS

### SOFTENING

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




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





RESINTECH INC.
INNOVATIONS IN ION EXCHANGE

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

# SBG1

## ANION EXCHANGE RESIN TYPE ONE GEL Cl OR OH FORM

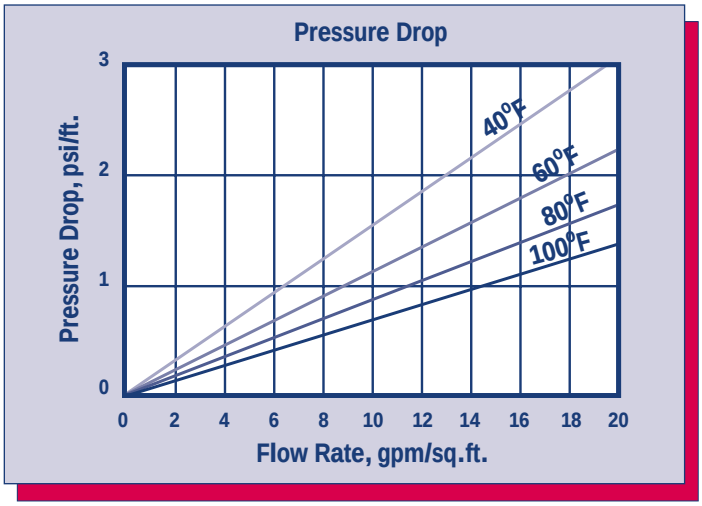
**RESINTECH SBG1** is a high capacity, shock resistant, gelular, Type 1, strongly basic anion exchange resin supplied in the chloride or hydroxide form as moist, tough, uniform, spherical beads. *RESINTECH SBG1* is intended for use in all types of deionization systems and chemical processing applications.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

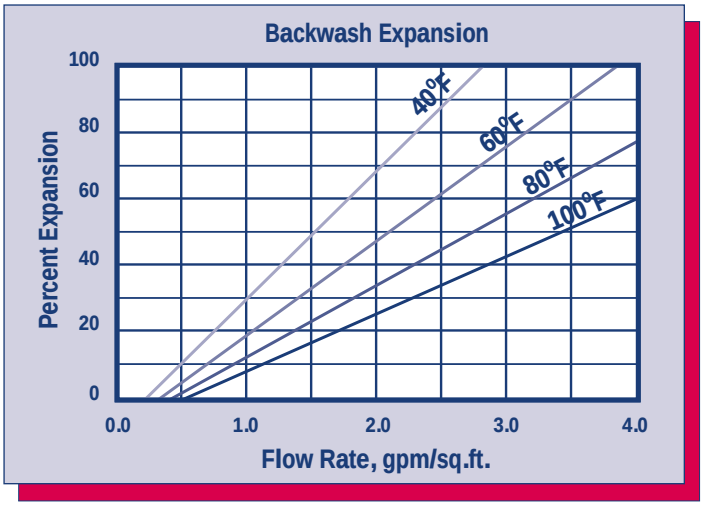
## FEATURES & BENEFITS

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

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

## HYDRAULIC PROPERTIES




### PRESSURE DROP

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

### BACKWASH

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

# RESINTECH® SBG1

## PHYSICAL PROPERTIES

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

## SUGGESTED OPERATING CONDITIONS

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

## OPERATING CAPACITY

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

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

## APPLICATIONS

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

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

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

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

# GROOVED & SMOOTH-END FLOWMETER MODEL MG/MS100

***SPECIFICATIONS***

## PERFORMANCE

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

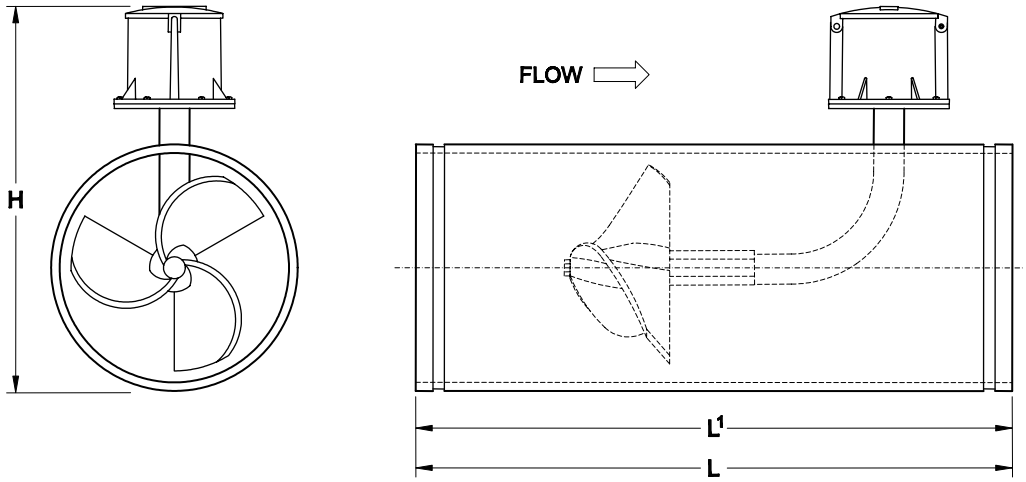
## MATERIALS

**TUBE**: Epoxy-coated carbon steel.
**BEARING ASSEMBLY**: Impeller shaft is 316 stainless steel. Ball bearings are 440C stainless steel.
**MAGNETS**: (Permanent type) Cast or sintered alnico
**BEARING HOUSING**: Brass; Stainless Steel optional
**IMPELLER**: Impellers are manufactured of high-impact plastic, retaining their shape and accuracy over the life of the meter. High temperature impeller is optional.

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

## OPTIONS

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




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

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

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

*Larger flowmeters on special order.*

# Appendix D

# Supporting Information

# MassDEP - Bureau of Waste Site Cleanup

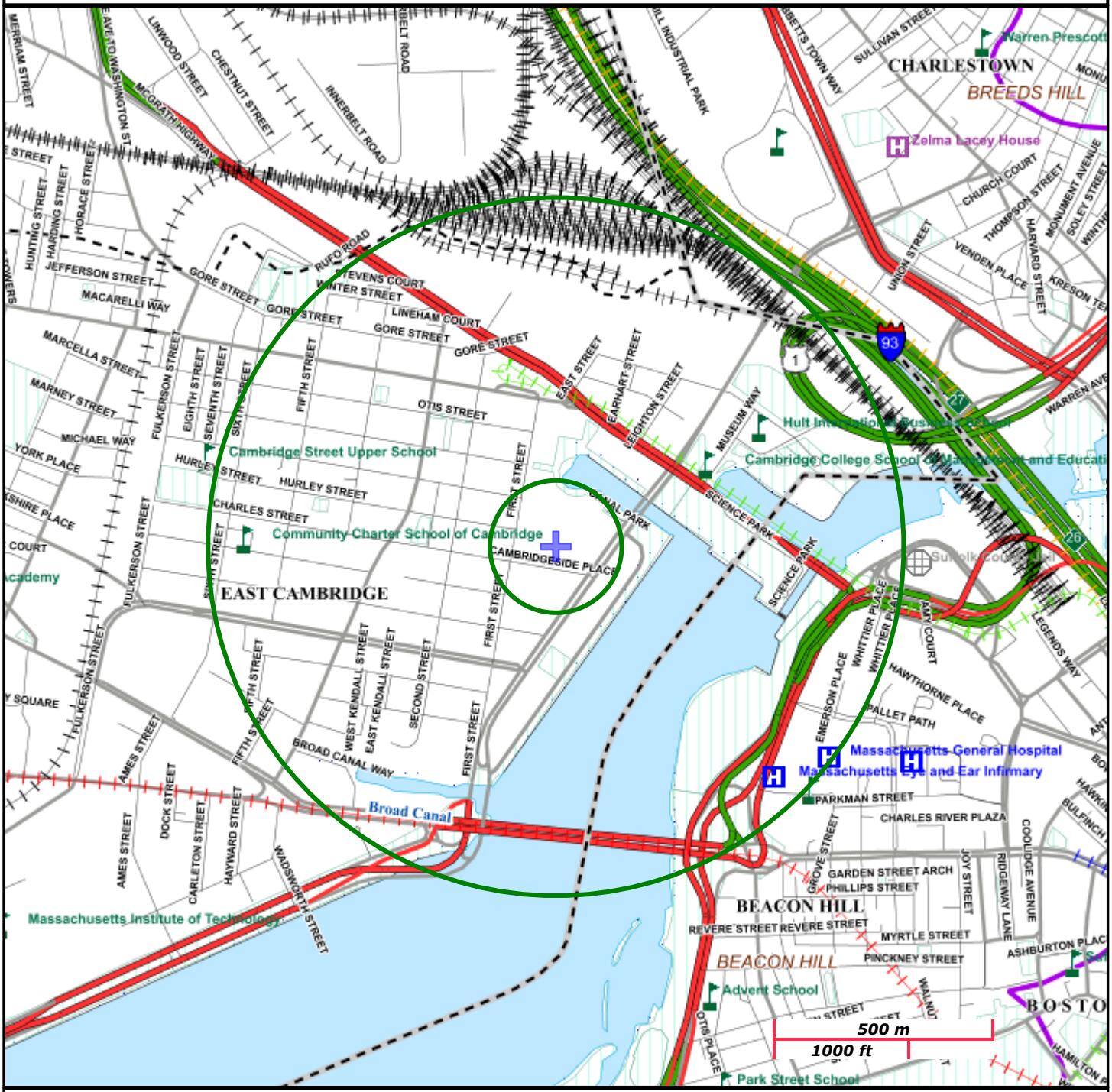
## Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

**Site Information:**
100 CAMBRIDGESIDE PLACE
100 CAMBRIDGESIDE PLACE CAMBRIDGE, MA

**NAD83 UTM Meters:**
4692675mN , 329024mE (Zone: 19)
September 24, 2020

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

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection




Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Documentation of the Results of the ESA Eligibility Determination:

Using information in Appendix II of the NPDES RGP, the project located at 100 Cambridgeside Place Cambridge, MA is eligible for coverage under this general permit under FWS Criterion A. This project is located in Middlesex County. No designated critical habitats were listed in the project area. An Endangered Species Consultation was conducted on the U.S. Fish & Wildlife Service New England Field Office ECOS IPaC webpage for the Site:

No Endangered species found at this location.

# United States Department of the Interior

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

In Reply Refer To: September 24, 2020
Consultation Code: 05E1NE00-2020-SLI-4140
Event Code: 05E1NE00-2020-E-12809
Project Name: 100 Cambridgeside Place

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

# Official Species List

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

This species list is provided by:

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

# Project Summary

Consultation Code: 05E1NE00-2020-SLI-4140

Event Code: 05E1NE00-2020-E-12809

Project Name: 100 Cambridgeside Place

Project Type: Water Withdrawal / Depletion

Project Description: Construction Dewatering

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.367430574621665N71.07599691825939W


Counties: Middlesex, MA

# Endangered Species Act Species

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

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

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

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

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

## Critical habitats

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

Documentation of the National Historic Preservation Act Eligibility Determination:

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

# Massachusetts Cultural Resource Information System

## MACRIS

MACRIS Search Results

Search Criteria: Town(s): Cambridge; Street No: 100; Street Name: Cambridgeside Pl; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

| Inv. No. | Property Name | Street | Town | Year |
|---|---|---|---|---|

# PERMIT TO DEWATER

Location: 100 Cambridgeside Place

Owner: Cambridgeside Galleria Associates Trust C/O New E

Contractor: John Moriarty

Temporary ☑

Permanent ☐

The property owner, Cambridgeside Galleria Associates Trust agrees to hold harmless and indemnify the City of Cambridge for any liability on the part of the City directly or indirectly arising out of the dewatering operation.

The issuance of this permit is based in part in the submission packet of the applicant with documentation as follows:

NPDES RGP NOI 100 Cambridgeside Place

In addition, the application has been reviewed by the City under third party agreement as documented in the following reports:

All activities conducted in conjunction with the issuance of this permit must be in accordance with the provisions of the aforementioned reports. Any deviations in conditions must be reported to and approved by the Commissioner of Public Works.

This permit is in addition to any other street permit issued by the Department in connection with any street excavation or obstruction; and all conditions as specified in the Discharge Permit for Dewatering.

For the entire period of time the groundwater is being discharged to a storm drain, the property owner shall provide copies of each Discharge Monitoring Report Form submitted to the EPA, pursuant to the owner's discharge permit.

If in the future the EPA requires the City of Cambridge to bring existing stormwater drainage into compliance with EPA quality standards, as a condition to the continuation of discharge of that stormwater (also including groundwater) into an EPA regulated system into which the _____ (property owner) drains, the owner will agree to maintain its water discharge with such EPA water quality standards.

The property owner and contractor shall at all times meet the conditions specified in the requisite legal agreement/affidavits.

All groundwater pumped from the work shall be disposed of without damage to pavements, other surfaces or property.

Where material or debris has washed or flowed into or has been placed in existing gutters, drains, pipes or structures, such material or debris shall be entirely removed and satisfactorily disposed of by the

Contractor during the progress of work as directed by the Public Works Department.

Any flooding or damage of property and possessions caused by siltation of existing gutters, pipes or structures shall be the responsibility of the Contractor.

Provisions shall be made to insure that no material, water or solid, will freeze on any pavement or in any location which will cause inconvenience or hazard to the general public.

Upon completion of the work, existing gutters, drains, pipes and structures shall be (bucket) cleaned and material disposed of satisfactorily prior to release by the Public Works Department.

Any permit issued by the City of Cambridge shall be revoked upon transfer of any ownership interest unless and until subsequent owner(s) or parties of interest agree to the foregoing terms.

This permit shall remain in effect for one year and shall be renewable thereafter at the agreement of the parties.

The following special conditions as set forth below are part of the permit.

| | |
|---|---|
| | Hereunto Duly Authorized |
| City Manager | Property Manager: Corporate Entity<br>President, General Partner or Trustee<br>Trustee with Instrument of Authority |
| | 9/28/20 |
| Date | Date |
| City Solicitor | Contractor (Al Vautour, John Moriarty & Associates, Inc.) |
| | 9/28/2020 |
| Date | Date |
| Commissioner of Public | Contractor |
| Date | Date |

CC: Engineering
Supervisor of Sewer Maintenance and Engineering
Superintendent of Streets
Commissioner of Inspectional Services

Print Form