

Consulting  
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## Investigation Summary, Detailed Alternatives Evaluation, and Recommendations

Bartlet Mall Frog Pond  
Newburyport, Massachusetts

**Submitted to:**

The City of Newburyport – Parks Commission  
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## Executive Summary

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The City of Newburyport Parks Commission (the City) is moving forward with an initiative to improve water quality in the Bartlet Mall Frog Pond in Newburyport, Massachusetts (the Pond; Figs. 1 and 2) to provide a better recreational space for public use. The City retained GEI to evaluate strategies for addressing sediment conditions that are contributing to poor water quality, including the presence of high phosphorus, cyanobacteria, and other organic and inorganic contaminants. The City has also retained Aqueous Consultants LLC of Andover, Massachusetts (Aqueous) to evaluate strategies for improving water quality. GEI and Aqueous understand that the City is interested in remedies that will provide a cost-effective, long-term solution for water quality in the Pond. This report presents the findings of our investigations, a detailed alternatives evaluation, our recommended alternative, and permitting considerations for managing sediment in the Pond.

### Summary of Pond and Upland Investigations and Findings

In November and December 2021, GEI performed the following investigations in the Pond and surrounding uplands to close data gaps identified in our 2021 Preliminary Alternatives Analysis, and to support a detailed alternatives evaluation of potential remedies:

- **Pond Investigations:** Investigations in the Pond included a sediment investigation, in-situ shear vane testing, a bathymetric survey, in-situ water quality assessment, and surface water sampling.
- **Upland Investigations:** Investigations in the upland adjacent to the Pond included a subsurface investigation, monitoring well installation and survey, in-situ water quality assessment, and hydraulic conductivity testing.

The groundwater table is located approximately 30 feet below the bottom of the Pond (Figs. 3A and 3B). Surface water in the Pond is contained by low-permeability sediment, peat, and shallow low-permeability silty sand lenses in the Pond basin. These low-permeability units prevent the Pond from draining into the regional aquifer. There are no continuously saturated hydraulic connections that exist between the Pond and the groundwater table and, therefore, no indication that the groundwater is feeding the Pond.

Results of GEI's investigation also indicated that:

- Phosphorus was present in all the sediment tested to depths of 12 feet.
- Dewatering the Pond water would likely require pre-treatment consisting of, at a minimum, carbon filtration and total suspended solids removal, prior to discharge to nearby catch basins.
- The shallow sediment is not suitable for disposal at a Massachusetts lined landfill. Therefore, disposal of sediment at an out-of-state landfill would likely be required.

## Alternatives Evaluation and Recommendations

Based on the data and information collected, GEI evaluated alternatives for addressing sediment conditions and improving water quality in the Pond. GEI's evaluation of each alternative considered effectiveness, estimated costs, and implementation feasibility.

Our evaluation focused on remedies for existing sediment in the Pond. An evaluation and cost estimate for potential water treatment systems and long-term water treatment is being prepared separately by Aqueous. Also, our evaluations do not include estimated costs for permitting, wildlife management, and final improvements of the Pond and the surrounding park area since the requirements for these items have not been developed. Therefore, the cost estimates provided below should be used only for comparing the sediment-related remedial alternatives and not for total project budgeting purposes

- Alternative 1: Pond Dewatering, Mechanical Dredge of Pond, Offsite Disposal, and Placement of Fill Material. Estimated Cost: \$5,200,000.
- Alternative 2: Hydraulic Dredge of the Pond, Partial Onsite Reuse of Sediments, Offsite Disposal of Excess Sediments, and Placement of Fill Material. Estimated Cost: \$3,620,000.
- Alternative 3: Pond Dewatering, Removal of Six inches of Sediment, and Liner Installation. Estimated Cost: \$1,430,000.
- Alternative 4: Pond Dewatering, In-Situ Solidification/Stabilization of Sediments, and Placement of Sand Benthic Layer: Estimated Cost: \$2,200,000.
- Alternative 5: Chemical Treatment of the Pond. Based on the information reviewed, Alternative 5 alone cannot provide a long-term solution for the Pond. This method would only manage cyanobacteria algal blooms and not ongoing phosphorus issues in surface water and sediment. Therefore, a comparative evaluation of effectiveness, estimated cost, and implementation was not developed. However, this technique may have benefits in the short-term such as:
  - A temporary measure for improving water quality while the long-term solution is being developed.
  - A method for pre-treating surface water in preparation for implementing the long-term solution.

Based on our evaluation, GEI recommends Alternative 3: Pond Dewatering, Removal of Six inches of Sediment, and Liner Installation. Details of our evaluation and the bases for our recommendation are presented in Section 3. We also identified permits that may be required for the alternatives, and a discussion of our review is in Section 4.

# 1. Background and Conceptual Site Model

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## 1.1 Background

The City of Newburyport Parks Commission (the City) is moving forward with an initiative to improve water quality in the Bartlet Mall Frog Pond in Newburyport, Massachusetts (the Pond; Figs. 1 and 2) to provide a better recreational space for public use. The City retained GEI to evaluate strategies to address sediment conditions that are contributing to poor water quality, including the presence of high phosphorus, cyanobacteria, and other organic and inorganic contaminants. The City has also retained Aqueous Consultants LLC of Andover, Massachusetts (Aqueous) to evaluate strategies for improving water quality. GEI and Aqueous understand that the City is interested in remedies that will provide a long-term solution for water quality in the Pond.

In June 2021, GEI submitted a Preliminary Alternatives Evaluation to the City that summarized costs and benefits of various remedial alternatives for the Pond, including:

- offsite disposal of sediment,
- onsite reuse of sediment in Geotubes or behind retaining walls,
- installation of a liner over the existing sediments, and
- application of chemical additives.

During a meeting on June 22, 2021, the City indicated it was most interested in further evaluating the alternatives for sediment excavation and onsite reuse of sediment and installation of a high-density polyethylene (HDPE) liner system but agreed that other alternatives were open for consideration. The City also agreed that collection of additional information and data would be needed to properly evaluate the alternatives. This report presents:

- a summary of the additional investigations performed,
- the findings of the investigations,
- an evaluation of alternatives,
- GEI's recommended alternative, and
- permitting considerations.

## 1.2 History

The Pond is located within a regionally mapped area of glacial stratified drift (USGS, 1999). Glacial stratified drift is a general term applied to all rock material (e.g., clay, silt, sand,

gravel, boulders) transported by a glacier and deposited directly by or from the ice, or by running water emanating from a glacier. Such areas are generally characterized as having predominantly high-permeability material and producing high yields for water supply.

As described in previous reports by others, the Pond is a kettle pond that was created during the retreat of Cape Cod Lobe glacier approximately 15,000 years ago. As the glacier retreated, large blocks of ice broke off from the glacier and rested on the glacial outwash. These blocks of ice were then surrounded and covered by glacial outwash materials. As the ice blocks melted, the glacial outwash material collapsed into the void and the kettle pond was formed. According to the previous reports, the kettle pond was likely occupied by wetland and aquatic plants for thousands of years which resulted in the layers of peat observed in our vibracores (see Section 2.1.1).

The soft sediments overlying the peat are likely the result of more recent deposition and industrial use of the Pond and the local area, which could have included damming of the outlet stream or placement of fill by the City or local property owners. Based on information from the City, we understand that inlet and outlet stream channels for the Pond previously existed but were filled at some point after Newburyport was first settled in 1635 and prior to the Great Fire of 1811. We understand that after the Great Fire of 1811, a cistern system named the Frog Pond Auxiliary Water Supply System was commissioned to use the Pond as a source of emergency water. The system was constructed between 1840 and 1908. A copy of the water system map is in Appendix A.

Since that time, we understand that several attempts have been made to remedy the odors and water quality at the Pond that are resulting from the eutrophic condition.

### **1.3 Conceptual Site Model**

The Pond is an approximately 100,500 square foot (s.f.) kettle hole pond surrounded by sloped embankments. The Essex County Superior Court building is located on the northeastern corner of the Pond.

Based on the findings of our investigation, the groundwater table is located approximately 30 feet below the bottom of Pond. Water in the Pond is contained by the low-permeability sediments, peat, and shallow low-permeability silty sand lenses in the Pond basin. These low-permeability units prevent the Pond from completely draining into the regional aquifer under hydrostatic pressure. There are no continuously saturated hydraulic connections between the Pond and the groundwater table and, therefore, no indication that the groundwater is feeding the Pond. Eutrophic conditions appear to be a result of poor water circulation and the accumulation of phosphorus and other nutrients in the water and sediment resulting from wildlife deposits and runoff from adjacent park areas.

## 2. Investigation Summary

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### 2.1 Pond Investigation

#### 2.1.1 *Sediment Investigation*

On November 29 and 30, 2021, GEI coordinated with TG&B Marine Services, Inc. of Monument Beach, Massachusetts (TG&B) to collect sediment samples from 11 locations (SD101 through SD107 and SD109 through SD112). SD108 was not completed within the investigation timeframe. TG&B advanced vibracores from a 14-foot, shallow draft, catamaran-style coring platform. Vibracores consisted of three-inch clear, cellulose acetate butyrate tubes.

TG&B advanced the vibracores to refusal or to the reach of the equipment, whichever occurred first. Vibracore depths ranged from 4.5 to 12.5 feet below the top of sediment. TG&B maintained the vibracores in a vertical position until transported back to land for processing and documentation by GEI staff. As part of the sample processing effort, GEI:

- Classified sediments in general accordance with Unified Soil Classification System (USCS), with modifications by GEI.
- Screened samples for volatile organic compounds (VOCs) with a photoionization detector (PID) and for hydrogen sulfide with a ToxiRAE using the jar headspace method.
- Documented any visual or olfactory evidence of contamination.
- Prepared vibracore logs and cross sections of pond lithology and groundwater.

GEI generally collected up to six vertically distributed sediment samples from each vibracore location for laboratory testing as follows:

- One sediment sample from the top foot of each vibracore.
- Up to two samples vertically distributed through the shallow sediment.
- Up to two samples from the peat layer underlying the shallow sediment.
- One sample from materials underlying the peat, if observed.

As part of this effort, GEI also collected composite sediment samples for offsite disposal characterization. One composite sediment sample was collected from each vibracore (SD101 through SD107 and SD109 through SD112) and consisted of sediment from the top 3 to 4.5 feet of each vibracore.



Based on our observations, the sediment profile of the Pond generally consisted of:

- Up to five feet of silt/silty sand.
- A peat layer to depths up to approximately 11 feet beneath the bottom of the Pond.
- A silty sand or sandy silt layer underlying the peat in four locations and extending to depths up to 12.5 feet beneath the bottom of the Pond.

Sediment sample locations are shown on Fig. 2. Sediment core logs are in Appendix B and cross sections are shown on Figs. 3A and 3B.

GEI submitted the following samples to Alpha Analytical of Westborough, Massachusetts (Alpha) for testing:

- 53 sediment samples for total phosphorus.
- 11 composite samples for offsite disposal characterization in accordance with the Massachusetts Department of Environmental Protection's (MassDEP) Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills (COMM-94-007) list, which includes: VOCs, Resource Conservation and Recovery Act 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), total petroleum hydrocarbons, polychlorinated biphenyls, semi-volatile organic compounds, and Toxicity Characteristic Leaching Procedure when prompted by total metal concentrations.

Analytical results indicated the following:

- Total phosphorous was present in all the sediment samples tested at concentrations ranging from 240 to 2,200 milligrams per kilogram.
- Consistent with previous findings and the testing results, data indicated that the sediments are not suitable for offsite disposal at a Massachusetts lined landfill and would require disposal at an out-of-state landfill.

Sediment testing results are summarized in Tables 1 (phosphorus) and 2 (disposal characterization). Laboratory data reports for sediment samples are provided in Appendix C.

### **2.1.2 In-Situ Shear Vane Testing**

During the vibracore program, a GEI engineer performed in-situ shear vane tests from the coring platform at seven of the coring locations (SD101, SD102, SD105, SD106, SD107, SD109 and SD110). The in-situ shear vane tests were performed to measure the undrained shear strength of the soft, cohesive sediments in the Pond and to evaluate the sediment bearing capacity. Testing was performed using the largest and second largest Humboldt

shear vanes, with a maximum shear strength measuring ability of the vanes of 170 pounds per square foot (psf) and 1,357 psf, respectively, due to expected soft sediments. Testing was performed at approximately 1.5 foot intervals starting at the top of sediment to refusal or until maximum equipment reach, whichever occurred first.

During the testing, refusal of the shear vanes was encountered at depths ranging between 5 to 7.1 feet below the top of sediment. We did not encounter refusal in SD109 (second attempt), which reached 8.8 feet below the top of sediment. No additional testing was performed below 8.8 feet due to limitations on the reach of the equipment. Due to the high sand content encountered at locations SD111 and SD112, GEI could not advance vanes through the sand layers. Therefore, shear strength data was not collected at these locations. At location SD110, shear vane data was only collected to 1.5 feet below the sediment surface due to refusal caused by an obstruction, such as a boulder, or a sand layer.

The measured shear strengths in the sediments tested ranged from:

- 2.62 to 62.8 psf within the top foot of sediment.
- 26.2 to 1,169 psf between 1.9 and 8.8 feet.

The sediment shear strength data will be used to evaluate construction methods for the selected alternative. Options for mitigating the low strength sediments may include placement of geotextiles, such as Geogrids, to support liner materials, and matting to support equipment. In-situ shear vane testing locations are shown on Fig. 2 and testing results are summarized in Table 3.

### **2.1.3 Bathymetric Survey**

GEI coordinated with TG&B to perform a bathymetric survey of the Pond. On November 29, 2021, TG&B's subcontractor, Hydrodata, Inc. of Southbury, Connecticut (Hydrodata) mobilized a two-person field crew, including a certified hydrographer, to perform the survey. The Hydrodata survey vessel was equipped with a survey grade Novatel RTK GPS, an Innerspace Model "456" dual frequency digital depth sounder, and the Vespos hydrographic software package. Horizontal control was referenced to the Massachusetts State Plane Coordinate System, North American Datum 1983. Vertical control was referenced to the North American Vertical Datum 1988 to tie the bathymetric survey into the upland survey of the Bartlet Mall that was performed separately by the City.

Based on the findings of the bathymetric survey, the Pond water depth ranges from approximately 6-inches at the edge of the Pond to 3.9 to 4.4 feet at the center of the Pond. The bathymetric survey is incorporated into the cross sections in Figs. 3A and 3B and is included in Appendix D.

### **2.1.4 Surface Water Sampling**

GEI collected surface water samples from the Pond to support data requests from the City and Aqueous. Surface water samples were collected from three spatially distributed locations (SW101, SW102, and SW103; Fig. 2). At each location, water samples were collected at the water surface and approximately 3 feet below the surface (SW101A at surface and SW101B 3 feet below surface, etc.). Water samples at the surface were collected directly into the unpreserved sample containers (or using a second clean container). Water samples from approximately 3 feet deep were collected with a peristaltic pump using dedicated sample tubing. During sample collection, GEI collected in-situ measurements of temperature, pH, conductivity, turbidity, and dissolved oxygen using a YSI multi-parameter water quality meter. In-situ surface water measurements are summarized on Table 4.

GEI submitted six surface water samples to Alpha to be tested for:

- E. coli and chloroform per the City's request, and
- Phosphorus, nitrate, nitrite, total nitrogen, and chlorophyll A, per Aqueous' request.

Additionally, one surface water sample (SW102 at the water surface) was submitted to Alpha to be tested for the analytical suite listed in Appendix VII of the National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) for Massachusetts. The purpose of this sampling was to assist in evaluating the level of treatment that may be required prior to discharge to the City's stormwater system.

Analytical results indicated the following:

- Chloroform was not detected in the six samples.
- E. Coli was detected in all six samples ranging from 2 to 130 coliform colonies per 100 milliliters.
- Phosphorus was detected in all six samples ranging from 0.088 to 0.101 milligrams per liter (mg/L).
- Nitrite, nitrate, and total nitrogen were not detected in the six samples.
- Nitrogen was detected in all six samples ranging from 1.6 to 1.8 mg/L.
- Chlorophyll A was detected in all six samples ranging from 128 to 144 milligrams per cubic meter.
- Concentrations in the NPDES RGP sample were below NPDES' Technology-Based Effluent Limits (TBEL) and Water Quality-Based Effluent Limits (WQBEL) for salt water. Salt water TBELs and WQBELs were used for comparison since the likely discharge points for dewatering are nearby catch basins that drain to a tidally influenced portion of the Merrimack River.

Surface water testing results are summarized in Tables 5 (City and Aqueous parameters) and 6 (NPDES). Laboratory data reports for the surface water samples are in Appendix E. Data indicated that dewatering could likely be managed under a NPDES Construction General Permit (CGP) or RGP. Required pre-treatment prior to discharge will be determined in the future, and will likely consist of, at a minimum, frac tanks, granular activated carbon (GAC) tanks, and bag filters.

## **2.2 Upland Investigation**

### **2.2.1 Subsurface Investigation**

Between December 1 and 3, 2021, GEI observed Northern Drill Service of Northborough, Massachusetts (Northern) advance four borings (B101 through B104; Fig. 2) around the Pond perimeter using hollow-stem auger techniques. A GEI engineer or scientist was onsite fulltime during the drilling to document conditions. During drilling, GEI made observations regarding any visual or olfactory evidence of contamination. Soil was visually classified in general accordance with the USCS and screened for total VOCs using the jar headspace method and a PID. Jar headspace readings ranged between non-detect and 0.4 parts per million, which is generally consistent with background conditions.

Based on GEI's observations, the subsurface around the Pond generally consisted of sand with gravel and silt with interbedded lenses of silty sand. Boring logs are in Appendix F.

Each boring was completed as a two-inch polyvinyl chloride (PVC) monitoring well. Each location was completed with a steel road box mounted flush with the ground surface and surrounded by a concrete pad. At location B101(MW), damp soil was observed at approximately 10 feet below ground surface during installation and a monitoring well was installed to 20 feet. However, B101(MW) has not contained groundwater since installation. Monitoring well installation logs are in Appendix G.

Between December 2 and 8, 2021, GEI developed the monitoring wells in preparation for hydraulic conductivity testing. On December 2, 2021, monitoring well B102(MW) was developed by purging the well dry with a whale pump. On December 8, 2021, monitoring wells B103(MW) and B104(MW) were developed with a Grundfos pump by purging at least 10 well volumes from each well.

Prior to development, on December 8, 2021, GEI measured depth to water in each of the monitoring wells:

- B101(MW): Not detected
- B102(MW): 5.58 feet
- B103(MW): 34.00 feet
- B104(MW): 35.31 feet

Based on the investigation, the groundwater table is located approximately 30 feet below the bottom of the Pond (Figs. 3A and 3B). The shallow groundwater encountered in B102(MW) is likely associated with leakage from the Pond.

Locations of each soil boring/monitoring well are shown in Fig. 2. Groundwater elevation measurements are summarized on Table 7.

### **2.2.2 Well Survey and Water Quality**

On December 8, 2021, GEI surveyed the top of PVC of the four new monitoring wells to tie their elevations into the bathymetric survey. Top of PVC elevations and groundwater elevations from December 8 and 15, 2021 are shown on Table 7. Additionally on December 8, 2021, GEI performed in-situ monitoring of groundwater in B102(MW), B103(MW), and B104(MW) using a YSI multi-parameter water quality meter. The YSI was used to collect measurements of temperature, pH, conductivity, turbidity, and dissolved oxygen approximately every 1.5 feet in the groundwater table. Water quality data collected with the YSI is in Table 4.

### **2.2.3 Hydraulic Conductivity Tests**

On December 15, 2021, GEI performed hydraulic conductivity tests on the newly installed monitoring wells. The hydraulic conductivity tests were performed to evaluate the Pond-aquifer connectivity and to support evaluation of remedial alternatives for the Pond that involve management of, or potential impacts to, the groundwater connection to the Pond. Hydraulic conductivity is a measure of the ability of porous media such as soil to transmit and drain water.

The Pond is located within a regionally mapped area of glacial stratified drift (USGS, 2018), which is generally understood to have relatively high hydraulic conductivities. Glacial stratified drift deposits are frequently used for water supply due to high yields.

GEI collected hydraulic conductivity measurements using various methodologies due to varying conditions between well locations.

Rising-head slug tests were performed in B102(MW) on December 15, 2021. Slug testing allows estimation of hydraulic conductivity by displacing a volume of groundwater in a well, then measuring the rate at which groundwater recovers to its static level. A peristaltic pump was used to accomplish displacement by removing a volume of groundwater. Recovery vs. time was recorded by a datalogger confirmed with measurements by a water level indicator. The data were analyzed using the Bouwer-Rice method (Bouwer and Rice, 1976; Bouwer, 1989). Two tests were performed at this well, with the average hydraulic conductivity being 0.04 feet per day (feet/d).

The hydraulic conductivities in B103(MW) and B104(MW) exceeded the measurement capabilities of slug testing. Additionally, a constant-drawdown test was attempted, in which maximum pumping rates were applied (based on maximum capacity of the Grundfos pump, approximately 7 gallons per minute). However, no measurable drawdown was observed in either of these wells.

To provide a low-end estimate of hydraulic conductivity, an empirical grain size-based method (Alyamani and Sen, 1993) was used. Based on the Alyamani and Sen method, hydraulic conductivity estimates for these locations were 30.3 and 14.2 feet/d, for B103(MW) and B104(MW), respectively. The samples analyzed for grain size were lab-composited from soil samples collected from discrete depths during drilling on December 2 and 3, 2021, and assigned sample IDs B103(MW) and B104(MW) for their respective locations. The composite samples represent the full screen lengths of the wells (26 to 36 feet and 16 to 46 feet, respectively, not just the saturated lower portion) and as such represent both the coarse fraction and the silty sand lenses within these intervals. Therefore, the hydraulic conductivity of the coarse fraction, which likely governs groundwater levels, drainage capacity, and yield, is likely higher than the grain-size based estimates.

Hydraulic conductivity test logs, the Alyamani and Sen calculations, and grain size analyses reports are in Appendix H.

Due to method limitations at B103(MW) and B104(MW) and potential bias of the Alyamani and Sen-based estimates, the calculated results were supplemented with literature-based ranges. Hydraulic conductivity estimates are provided below, based on field testing combined with the conceptual and literature-based understanding of the Pond and aquifer.

- Fine grained lenses appear to have a low hydraulic conductivity, based on the measured 0.04 feet/d at B102(MW) and evidence of perched water. Shallow fine-grained lenses, in addition to the low permeability Pond sediments, may contribute to containment of Pond water and limited drainage into the groundwater table.
- The stratified drift is estimated to have an average hydraulic conductivity ranging between 10 and 100 feet/d. The grain size-based hydraulic conductivity estimates of 14.2 and 23.5 feet/d are assumed to represent both the fine and coarse aquifer components. The inability of slug test and pumping methodology to create drawdown in B103(MW) and B104(MW) suggests that hydraulic conductivities governing aquifer behavior could be greater than those estimated based on grain size. USGS notes that stratified drift aquifers are characterized by hydraulic conductivities ranging from 35 to 1,000 feet/d (Ayotte et al., 1999). Textbook hydraulic conductivity values based on grain size range from 1-1,000 feet/d for clean fine-coarse sand (Heath, 1983) and 2.8 to 280 feet/d for well-sorted sands and glacial outwash (Fetter, 1994). Since the observed soil types did not appear to have

exclusively coarse components, it is unlikely that the actual hydraulic conductivity would approach 1,000 feet/d. The presence of fines lenses likely limits the hydraulic conductivity to below 100 feet/d; however, additional testing would be recommended if a detailed understanding of hydraulic conductivity of the regional aquifer is required.

## 2.3 Summary of Pond and Upland Investigation Findings

The Pond is located within a regionally mapped area of glacial stratified drift (USGS, 1999). Soil boring observations in our investigation were consistent with regional characterization, where the stratified drift (both above and below the water table) appears to be predominantly sand and gravel, with interbeds containing silty sand and sandy silt.

The sediment profile of the Pond generally consisted of up to approximately 5 feet of silt/silty sand, underlying by peat up to depths of approximately 11 feet. A silty sand or sandy silt layer underlying the peat up to 12.5 feet was observed in four vibracore locations. Based on the results of our investigation, the surface water in the Pond is contained by the low-permeability sediments, peat, and shallow, low-permeability, silty sand lenses. These low-permeability units appear to prevent the Pond from draining into the regional aquifer under its own hydrostatic pressure.

Based on the findings of our investigations, the groundwater table is located approximately 30 feet below the bottom of Pond. Additionally, there does not appear to be any continuously saturated hydraulic connections that exist between the Pond and the groundwater table; therefore, there is no indication that groundwater is feeding the Pond. The shallow groundwater encountered at in B102(MW) is likely a result of leakage from the Pond since the depth to groundwater in the well was approximately 5 feet below the surface water elevation of the Pond.

With respect to our investigation to assess the eutrophic condition of the Pond, GEI's testing results indicated that phosphorus was detected in all sediment samples down to the maximum depth of the vibracores at refusal or equipment reach. Based on testing results to characterize the sediment for offsite disposal, the shallow sediment is not suitable for disposal at a Massachusetts lined landfill. Therefore, disposal of sediment at an out-of-state landfill is likely required.

Phosphorus, e. Coli, nitrogen, and chlorophyll A were detected in all surface water samples. Testing results did not exceed applicable NPDES RGP TBEL and WQBEL for salt water. Salt water TBELs and WQBELs were used for comparison since the likely discharge points that would be used for dewatering are nearby catch basins that drain to a tidally influenced portion of the Merrimack River. Data indicated dewatering could likely be managed under a NPDES CGP or RGP.

The sediment shear strength data will be used to evaluate potential designs and appropriate construction methods. Options for mitigating the low strength sediments may including placement of geotextiles, such as Geogrids, to support liner materials, and matting to support equipment.



### 3. Detailed Alternatives Evaluation

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Based on the data and information discussed in Section 2, GEI evaluated alternatives for addressing sediment conditions and improving water quality in the Pond. GEI's evaluation of each alternative considered effectiveness, estimated costs, and implementation feasibility. Our evaluation focused on remedies for sediment in the Pond. An evaluation and cost estimate for potential water treatment systems and long-term surface water treatment were prepared separately by Aqueous.

GEI evaluated the following potential alternatives:

- Alternative 1: Pond Dewatering, Mechanical Dredge of Pond, Offsite Disposal, and Placement of Fill Material
- Alternative 2: Hydraulic Dredge of the Pond, Partial Onsite Reuse of Sediments, Offsite Disposal of Excess Sediments, and Placement of Fill Material
- Alternative 3: Pond Dewatering, Removal of Six inches of Sediment, and Liner Installation
- Alternative 4: Pond Dewatering, In-Situ Solidification/Stabilization (ISS) of Sediments, and Placement of Sand Benthic Layer
- Alternative 5: Chemical Treatment of the Pond

GEI's estimates below are based on the Pond size of approximately 100,500 s.f. Cost estimates are summarized in Table 8. Our cost estimates do not include estimated costs for permitting, wildlife management, and final improvements/restoration of the Pond and the surrounding park area. Estimated unit costs were based on GEI's experience with similar projects and non-project specific vendor quotes. Actual costs may be higher or lower than those presented here. Therefore, the cost estimates provided below should be used only for comparing the sediment-related remedial alternatives and not for total project budgeting purposes.

#### 3.1 Alternative 1: Pond Dewatering, Mechanical Dredge of the Pond, Offsite Disposal, and Placement of Fill Material

Alternative 1 consists of dewatering the Pond, removing sediment throughout the Pond to the point that refusal was encountered during the 2021 investigations, and transporting the sediment offsite for disposal at an out-of-state landfill. This alternative would improve water quality in the Pond by mitigating the ongoing phosphorus issue through complete removal of the nutrient laden surface water and sediments and replacement with clean imported material.

Due to the proposed depth of excavation, a support of excavation (SOE) system would likely be required to maintain the stability of the area surrounding the Pond during dewatering and full sediment dredging. The SOE would likely consist of steel sheet piles installed around the perimeter of the Pond. Once the SOE system is installed, the Pond would be dewatered to:

- Remove the current stagnant water that is impacted with phosphorus, cyanobacteria, and other water quality issues, and
- Allow dredging/excavation of the sediment to be performed in the “dry”.

Once the dewatering is complete, dredging/excavation of the sediment would be performed. It is anticipated that sediment could be managed within, or just outside of, the Pond footprint to reduce the space needed for sediment management therefore reducing impacts to Bartlet Mall.

GEI assumed that a portion of Bartlet Mall would be used as laydown area for sediment management purposes. The estimated minimum duration of dredging and sediment dewatering would be 12 weeks. This estimated duration does not include the time needed for permitting, design, mobilization, site preparation, site restoration, or demobilization, which is anticipated to be at least an additional 24 weeks. This alternative includes the following:

- Installation of SOE around the edge of the Pond,
- Vibration monitoring at the courthouse during sheet pile installation.
- Dewatering of the Pond.
- Removal of sediment to between 4 and 12.5 feet resulting in generation of approximately 13,000 cubic yards (cy) of sediment.
- Onsite dewatering and management of sediment.
- Offsite disposal of the sediment at an out-of-state landfill.
- Backfill with clean imported material.
- Restoration of the area once construction is complete.

The following was assumed for Alternative 1:

- SOE would consist of sheet piles driven to approximately 12 feet along the entire perimeter of the Pond. The final water level and post-excavation slopes of the Pond banks would provide adequate stability to remove SOE after placement of backfill and refill of the Pond with water. The depth estimates for SOE are for cost estimating purposes only and may vary based on the actual design.

- The Pond would be drained completely of water prior to mechanical dredging/excavation.
- Pond water would be treated and discharged to the city storm drain system in accordance with NPDES CGP or RGP requirements. Water treatment is assumed to include a multi-step approach consisting of frac tanks, GAC tanks and bag filters.
- Sediments would be allowed to gravity drain in the Pond area. Some additional amendment would likely be needed to facilitate efficient offsite disposal and to meet Massachusetts Department of Transportation requirements and disposal facility acceptance criteria.
- For our cost estimating purposes, we used a conversion rate of 1.3 tons per cy for sediment.
- Limited site restoration would be required for managing impacts to Bartlet Mall from the construction effort.

The estimated cost for Alternative 1 is \$5,200,000, subject to the assumptions and limitations described above.

### **3.2 Alternative 2: Hydraulic Dredge of the Pond, Partial Onsite Reuse of Sediments, Offsite Disposal of Excess Sediments, and Placement of Fill Material**

Alternative 2 consists of removing sediment to the point that refusal was encountered during the 2021 investigations and reusing a portion of the sediment onsite in either the upland area or in the Pond to create an island. Excess sediment that could not be reused would be transported offsite for disposal. This alternative would improve water quality in the Pond by mitigating the ongoing phosphorus issue through removal of the nutrient laden sediments. Since hydraulic dredging of the Pond is proposed for this alternative, it was assumed that existing surface water would remain in the Pond. GEI assumed that the existing Pond water would remain and be treated by the future water treatment system being designed by Aqueous (not included in GEI's estimate).

This alternative involves hydraulic dredging which would likely be performed from a small, portable barge. Sediment from the hydraulic dredging effort would be pumped into Geotubes for dewatering. Geotubes are large geotextile bags that are commonly used to facilitate dewatering of sediment for hydraulic dredging projects. Once sediment is in the Geotube, effluent water drains from the bags and the sediments are retained. The filled Geotubes can be stacked and left in place, then can be covered with imported topsoil.

Up to 13,000 cy of sediment may be generated using this approach. GEI assumed that, due to space constraints at Bartlet Mall, only 3,000 cy of sediment could be reused onsite.

The remaining 10,000 cy would be transported offsite for disposal. This excess sediment would require amendments to facilitate offsite transport. Due to the compounds detected in the sediment, the sediment would require disposal at an out-of-state landfill.

GEI assumed that a significant portion of Bartlet Mall would be required as laydown area for sediment management purposes. The estimated minimum duration of dredging and sediment dewatering would be 12 weeks. This estimated duration does not include the time needed for permitting, design, mobilization, site preparation, site restoration, or demobilization which is anticipated to be at least an additional 24 weeks.

This alternative includes the following:

- Removal of sediment to between 4 and 12.5 feet resulting in generation of approximately 13,000 cy of sediment.
- Onsite dewatering and management of sediment.
- Reusing up to 3,000 cy of sediment at a nearby upland area or in the Pond for island creation.
- Covering the reused sediment with one foot of topsoil and hydroseed.
- Offsite disposal of up to 10,000 cy of excess sediment at an out-of-state landfill.
- Backfill with clean imported material.
- Restoration of the Bartlet Mall area once construction is complete.

The following was assumed for Alternative 2:

- The existing Pond water would remain, and water treatment would be performed once the system is installed.
- The entire upland portion of the park would be used as laydown area for material management.
- Sediments would gravity drain prior to reuse onsite. Sediments would be allowed to gravity drain into the Pond and some additional amendment would be needed to facilitate offsite disposal and to meet transportation or disposal facility requirements. For our cost estimating purposes, we used a conversion rate of 1.3 tons per cy for sediment.
- Up to 3,000 cy of sediment would remain in Geotubes and reused in the upland or to create an island in the Pond.
- Up to 10,000 cy of sediment may need to be disposed of offsite.

The estimated cost for Alternative 2 is \$3,620,000. This estimate is subject to the assumptions and limitations described above.

### **3.3 Alternative 3: Pond Dewatering, Removal of Six Inches of Sediment, Installation of Liner System, and Offsite Disposal**

Alternative 3 consists of dewatering the Pond, removing six inches of sediment, and installing a liner system over the remaining sediments. This alternative would improve water quality in the Pond through removal of the nutrient laden surface water and by preventing phosphorus from leaching from the sediment back into the water column.

The anticipated first step for this alternative is to dewater the Pond. Dewatering the Pond will be performed to:

- Remove the current stagnant water that is impacted with phosphorus, cyanobacteria, and other water quality issues.
- Allow dredging/excavation of the sediment and peat to be performed in the “dry”.

Once the dewatering is complete, dredging/excavation of up to six inches of sediment would be performed. Removal of this limited volume of sediment is necessary to accommodate placement of the liner system and to maintain the current water depth of the Pond. GEI understands that the current water depth is the minimum depth necessary to achieve long-term acceptable water quality in the Pond once the water treatment system is installed. It is anticipated that sediment could be managed within, or just outside of, the Pond to:

- Allow any effluent to drain immediately back into the Pond area.
- To reduce the space needed for sediment management therefore reducing impacts to Bartlet Mall.

Excess sediment would then be amended, if necessary, to facilitate offsite transport. Due to the compounds detected in the sediments in the Pond, sediment will be transported offsite for disposal at an out-of-state landfill.

Once the dredging/excavation is complete, the liner system will be installed. GEI has assumed the liner system will consist of the following:

- A geogrid to add strength to the existing low strength sediments;
- An HDPE liner;
- Up to 3-inches of 1.5-inch stone to armor the HDPE liner;
- Up to 3-inches of sand to act as a benthic layer; and,
- A methane venting system.

GEI assumed that a portion of Bartlet Mall may need to be used as laydown area for sediment management purposes. The estimated minimum duration of dewatering, dredging/excavation, liner installation would be 16 weeks. This estimated duration does not include the time needed for permitting, design, mobilization, site preparation, site restoration, or demobilization which is anticipated to be at least an additional 24 weeks.

Other alternatives for managing sediment onsite may be feasible. These alternatives have the potential for reducing or eliminating the need for offsite disposal of sediments and may include:

- Reusing sediments in the Pond by creating a small island that would be covered by the liner system.
- Increasing the overall height of the banks along the edge of the Pond by one foot, or more if feasible, to maintain the existing water depths without the need for sediment removal to accommodate the liner system.

However, since there is uncertainty regarding approval of either of these alternatives, GEI conservatively assumed that this alternative would require offsite disposal of six inches of sediment to accommodate the liner system.

This alternative includes the following:

- Dewatering of the Pond.
- Generation of approximately 2,000 cy of sediment.
- Onsite dewatering and management of sediment.
- Installation of the liner system described above.
- Offsite disposal of the sediment at an out-of-state landfill.
- Restoration of area once construction is complete.

The following was assumed for Alternative 3:

- The Pond would be drained completely of water prior to mechanical dredging/excavation.
- Pond water would be treated and discharged to the city storm drain system in accordance with NPDES CGP or RGP requirements. Water treatment is assumed to include a multi-step approach consisting of frac tanks, GAC tanks and bag filters.
- Evaluation and design of a methane venting system would be included as part of the design process.

- Due to the limited nature of the excavation, support would not be necessary and is not included in the cost estimate.
- For our cost estimating purposes, we used a conversion rate of 1.3 tons per cy for sediment.
- Limited site restoration for managing impacts to Bartlet Mall from the construction effort.

The estimated cost for Alternative 3 is \$1,430,000. This estimate is subject to the assumptions and limitations described above.

### **3.4 Alternative 4: Pond Dewatering, ISS of Sediments, and Placement of Sand Benthic Layer**

Alternative 4 consists of dewatering the Pond, treating the existing sediments using ISS techniques, and placement of a sand benthic layer over the ISS treated sediments. Offsite disposal of excess sediments would likely be necessary due to volumetric expansion that typically occurs during application of ISS. This alternative would improve water quality through removal of the nutrient laden surface water and by solidifying and/or stabilizing the nutrient laden sediments to eliminate the leaching pathway of phosphorus. Additives to the ISS may also include chemicals such as hydrogen peroxide to eliminate cyanobacteria in the shallow sediments.

Prior to construction, a bench-scale study would be required to evaluate the appropriate admixture and dosage rate for ISS. Various combinations and dosages of materials would be evaluated as part of the bench-scale study and would likely include materials such as Portland cement, organoclays, bentonite, hydrogen peroxide, etc. Once the appropriate admixture and dosage rate are determined, the anticipated first construction step for this alternative is to dewater the Pond. Dewatering the Pond will be performed to:

- Remove the current stagnant water that is impacted with phosphorus, cyanobacteria, and other water quality issues.
- Allow ISS of the sediment and peat to be performed in the “dry”.

Once the dewatering is complete, ISS of the sediment would be performed up to two feet below the sediment surface. As discussed above, volumetric expansion is typical when the admixture is applied to the sediment. Removal of the excess treated material generated by volumetric expansion, along with an additional 6-inches, would be necessary to maintain the current water depth of the Pond and to accommodate placement of the sand benthic layer. GEI understands that the current water depth is the minimum depth necessary to achieve long-term acceptable water quality in the Pond once the water treatment system is installed.

It is anticipated that excess ISS-treated sediment could be managed within, or just outside of, the Pond to reduce the space needed for sediment management therefore reducing impacts to Bartlet Mall.

Since the ISS process would solidify the sediment, it is anticipated that no additional amendment of excess sediment would be necessary to facilitate transport of the sediment offsite. Due to the compounds detected in the sediments in the Pond, excess sediment will be transported offsite for disposal at an out-of-state landfill.

Once the ISS is complete and the excess sediment is removed, the sand benthic layer would be placed. GEI has assumed the benthic layer will consist of up to six inches of sand.

The estimated minimum duration of ISS and material placement is estimated to be 12 weeks. This estimated duration does not include the time needed for permitting, design, mobilization, site preparation, site restoration, or demobilization which is anticipated to be at least an additional 24 weeks

It should be noted that other alternatives for managing sediment onsite may be feasible. These alternatives have the potential for reducing or eliminating the need for offsite disposal of sediments and could include:

- Reusing sediments in the Pond by creating a small island that would be covered by geotextile and topsoil.
- Increasing the overall height of the banks along the edge by a foot, or more if feasible, to maintain the existing water depths without the need for sediment removal to accommodate the benthic layer.

However, since there is uncertainty regarding approval of either of these alternatives, GEI has conservatively assumed that this alternative will require offsite disposal of sediments to accommodate the benthic layer.

This alternative includes the following:

- Dewatering of the Pond.
- ISS of approximately 7,400 cy of sediment.
- Removal of up to approximately 3,400 cy of ISS-treated sediment which includes
  - Approximately 1,500 cy of excess ISS-treated sediments resulting from volumetric expansion.
  - Approximately 1,900 cy of ISS-treated sediment to accommodate placement of a sand benthic layer after ISS is complete.



- Placement of a 6-inch sand benthic layer.
- Offsite disposal of excess sediment at an out-of-state landfill.
- Restoration of area once construction is complete.

The following was assumed for Alternative 4:

- The Pond would be drained completely of water prior to ISS.
- Pond water would be treated and discharged to the city storm drain system in accordance with NPDES CGP or RGP requirements. Water treatment is assumed to include a multi-step approach consisting of frac tanks, GAC tanks, and bag filters.
- A volumetric expansion of up to 20% may result from application of ISS.
- For our cost estimating purposes, we used a conversion rate of 1.3 tons per cy for sediment.
- Limited site restoration for managing impacts to Bartlet Mall from the construction effort.

The estimated cost for Alternative 4 is \$2,200,000. This estimate is subject to the assumptions and limitations described above

### **3.5 Alternative 5: Chemical Treatment of Pond**

Alternative 5 consists of performing chemical treatment of the Pond using prescriptive dosing methods once aeration and circulation have been implemented. This alternative would improve water quality by mitigating the issues associated with cyanobacteria algal blooms by applying yearly prescriptive doses of algicide to the Pond from late spring through early fall. This alternative would only manage cyanobacteria algal blooms in the Pond and not ongoing phosphorus issues in surface water mobilizing from sediment. The ongoing release of phosphorus from the sediments, if left unabated, is likely to continue to present challenges to obtaining the City's long-term water quality goals for the Pond. Since this alternative would not achieve the City's long-term water quality goals, a comparative evaluation of effectiveness, estimated costs, and implementation to other alternatives was not completed.

Although it was not considered a complete remedy, GEI researched options for mitigating the cyanobacteria issue using chemical treatments such as SeCLEAR Algicide and Water Quality Enhancer or Captain XTR Algicide, both produced by SePRO. Based on case studies and information provided by SePRO, these treatments have been successfully applied to manage cyanobacteria algal blooms in eutrophic water bodies when combined with aeration and circulation. However, as mentioned above, these treatments would not be able to address the free phosphorous in the surface water or the continued mobilization of

phosphorus from sediment. We understand that alum has been previously used in attempt to mitigate phosphorous in the water column but was not successful; therefore, evaluation of alum was not included in this alternatives analysis. Other chemical treatments to bind free phosphorus in water bodies are available but are not currently approved for use in Massachusetts.

This alternative includes applying prescriptive doses of the following:

- If algae density is low, apply 10 gallons of SeCLEAR once every 3 weeks from April through September, or as needed.
- If filamentous algae mats appear at the surface, apply 10 gallons of Captain XTR once every 3 weeks from April through September, or as needed.

While this alternative does not meet the city's long-term water quality goals, this alternative may have benefits in the short-term such as:

- A temporary measure for improving water quality while the selected long-term solution is being developed.
- A method for pre-treating surface water in preparation for implementing the long-term solution.

The following was assumed for Alternative 5:

- Application of these products would be performed concurrently with aeration and circulation of the Pond; and
- Up to 5 applications of SeCLEAR and 2 applications of Captain XTR may be required each year from April through September.

The annual cost for Alternative 5 is approximately \$3,500, subject to the assumptions and limitations described above. This cost includes materials and labor associated with applying the chemicals.

### **3.6 Recommendations**

GEI evaluated alternatives for addressing sediment conditions and improving water quality in the Pond. GEI's evaluation of each alternative considered effectiveness, estimated costs, and implementation feasibility. Based on this evaluation, GEI has developed the following summary of our findings for the City's consideration:

### **3.6.1 Alternative 1: Pond Dewatering, Mechanical Dredge of Pond, and Offsite Disposal**

This alternative removes the phosphorus-impacted surface water and sediments. However, GEI *does not* recommend this alternative due to:

- The costs associated extensive excavation required to remove the sediments and peat coupled with the SOE requirements to maintain the stability around the Pond
- The costs required to manage, transport, and dispose of up to 13,000 cy of sediment offsite.
- The impacts to the community due to increased truck traffic required for transport of sediments offsite and import of fill materials.
- The potential impacts to the Bartlet Mall resulting from the need for laydown space for materials management.
- The Pond water appears to be contained by the low-permeability sediments currently present in the Pond. If these low permeable sediments were removed, significant leakage to the regional aquifer may be created. If so, this could prevent the Pond from retaining water unless the Pond was re-lined with low permeability or impermeable materials.

### **3.6.2 Alternative 2: Hydraulic Dredge of the Pond, Partial Onsite Reuse of Sediments, and Offsite Disposal of Excess Sediments**

While this alternative likely successfully removes the phosphorus-impacted sediments, GEI *does not* recommend this alternative due to:

- The extensive dredging required to remove the sediments and peat.
- The uncertainty associated with obtaining local and state approval to reuse up to 3,000 cy of sediment at the park.
- The significant costs required to manage, transport, and dispose of up to 10,000 cy of sediment offsite.
- Leaving the existing nutrient-laden water in the Pond to be managed by others.
- The impacts to the community due to increased truck traffic required for transport of sediments offsite and import of fill materials.
- The potential significant impact to the Bartlet Mall resulting from the need for laydown space for materials management.
- The Pond water appears to be contained by the low-permeability sediments currently present in the Pond. If these low permeable sediments were removed, significant

leakage to the regional aquifer may be created. If so, this could prevent the Pond from retaining water unless the Pond was re-lined with low permeability or impermeable materials.

### **3.6.3 Alternative 3: Pond Dewatering, Removal of Six inches of Sediment, and Liner Installation**

GEI *recommends* this alternative due to:

- Removal of phosphorus and nutrient-laden surface water.
- Limited sediment removal needed to accommodate installation of the liner system.
- Providing better benthic conditions post-construction when compared to current conditions.
- The current depth of the Pond is maintained which may be beneficial for public safety.
- This alternative is the lowest cost, and most feasible alternative for achieving the City's long-term water quality goals for the Pond.

### **3.6.4 Alternative 4: Pond Dewatering, ISS of Sediments, and Placement of Sand Benthic Layer**

While this alternative likely successfully binds the phosphorus-impacted sediments, GEI *does not* recommend this alternative due to:

- The uncertainty associated with obtaining local and state approval to solidify the Pond using ISS methods.
- Since the ISS mix used to solidify the bottom of the Pond is likely to contain some percentage of Portland cement, and the pH of the Pond may be affected. High pH (e.g., between 8 and up to 12) could exist in surface water for some period after mixing. The duration of the elevated pH would be driven by the curing time of the ISS and the amount of surface water contact with the resulting cured material. Therefore, the estimated duration of elevated pH is unknown.
- The significant costs required to manage, transport, and dispose of up to 3,400 cy of sediment offsite.
- The impacts to the community due to increased truck traffic required for transport of sediments offsite and import of fill materials.
- The potential significant impact to the Bartlet Mall resulting from the need for laydown space for materials management.

### **3.6.5 Alternative 5: Chemical Treatment of the Pond**

While this alternative likely successfully manages the cyanobacteria issues in the short-term, it:

- Requires aeration and circulation of the water to be performed for the prescriptive dosing to be successful.
- Does not mitigate the ongoing contribution of phosphorous from sediment or the free phosphorus present in surface water.

Since the phosphorus-impacted surface water and sediments cannot currently be mitigated by this alternative, GEI *does not* recommend this alternative as a long-term solution. However, as discussed in Section 3.5, this alternative may provide short-term benefits for water quality in the Pond.

## 4. Permitting Considerations

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The following environmental permits and approvals may be required for the Pond sediment remedy alternatives currently under consideration.

- Order of Conditions from the Newburyport Conservation Commission (the Commission) pursuant to the provisions of the Massachusetts Wetlands Protection Act (M.G.L.c. 131, s. 40) and Chapter 6.5, Article II – Wetlands of the City of Newburyport Code of Ordinances.
- Department of the Army General Permits GP 23 (aquatic habitat restoration, establishment, or enhancement) from the U.S. Army Corps of Engineers (Army Corps), pursuant to the provisions of Section 404 of the Federal Clean Water Act of 1972.
- Water Quality Certification from MassDEP pursuant to the provisions of Section 401 of the Federal Clean Water Act of 1972.
- United States Environmental Protection Agency General Permit for Stormwater Discharges from Construction Activities (CGP) or Remediation General Permit for Massachusetts & New Hampshire (RGP).
- Surface Water Discharge Permit from MassDEP pursuant to the provisions of M.G.L. c. 21, §§ 26 through 53 (i.e., the Massachusetts Clean Waters Act).
- Massachusetts Environmental Policy Act (MEPA) review approval from the secretary of the Executive Office of Energy & Environmental Affairs pursuant to the provisions of M.G.L. c. 30, §§ 61 through 62L.

### 4.1 Order of Conditions

An Order of Conditions from the Commission is required for any work that will alter (temporarily or permanently) a wetland resource area. Wetland resource areas include, among others, land under water bodies and waterways, banks, vegetated wetlands, and land subject to flooding during a 100-year storm event. The Commission also considers a “buffer zone” (i.e., uplands within 100 feet of certain wetland areas) to be a wetland resource area. The Order of Conditions is issued following the Commission’s review of a Notice of Intent and completion of a public hearing, during which the Commission will determine whether the work will be conducted in compliance with specific regulatory performance standards. The performance standards are specific to the type of wetland resource area to be altered.

## **4.2 Department of the Army Permit**

A Department of the Army Permit from the Army Corps is required for any work that will result in the discharge of dredged or fill material into “waters of the United States”. It is anticipated that the Pond may be considered a “water of the United States” subject to the Army Corps’ jurisdiction. If so, sediment remedies that include liner installation and/or the addition of materials to the Pond will likely be subject to this permit program.

It is anticipated that the sediment remedy alternatives under consideration can be approved under the provisions of the Army Corps’ General Permit for Massachusetts as a GP 23 project. GP 23 projects are those conducted for “aquatic habitat restoration, establishment, or enhancement”. A project that can be authorized pursuant to the terms and conditions of a General Permit are less difficult for the Army Corps to approve and will receive approval faster than those for which an Individual Permit is required. The approval of the work as a General Permit project will require the submission of a Pre-Construction Notification to the Army Corps followed by the issuance of the Army Corps’ confirmation of coverage.

## **4.3 Section 401 Water Quality Certification**

A Section 401 Water Quality Certification from MassDEP is required as a prerequisite to the issuance of a Department of the Army Permit, including the General Permit for Massachusetts. Accordingly, any alternative requiring the issuance of an Army Corps Permit will also require the issuance of a Water Quality Certification.

## **4.4 NPDES CGP or RGP**

The NPDES CGP covers stormwater discharges to waters of the United States from heavy and civil engineering construction activities disturbing one or more acres of land. The NPDES RGP is available for sites located in Massachusetts and New Hampshire which discharge 1.0 million gallons per day or less as a result of remediation activities. One of these permits will likely be necessary for alternatives requiring dewatering.

## **4.5 Surface Water Discharge Permit**

A Surface Water Discharge Permit from MassDEP is required for the discharge of “pollutants” into the surface waters of the Commonwealth. Any treatment alternative that will result in the discharge of a chemical into the Pond to treat the cyanobacteria condition but does not involve the discharge of dredged or fill material may be subject to this permit program. Ongoing chemical treatment may be subject to this permit program.

## 4.6 MEPA Review

Projects which require the issuance of a state permit and/or involve the expenditure of state funds are subject to the provisions of the MEPA statute. Although all such projects are subject to the provisions of the statute, only those actions that exceed specified regulatory thresholds are subject to MEPA review through the filing of MEPA documentation. Required documentation include an Environmental Notification Form (ENF) and, depending on the significance of the action, an Environmental Impact Report (EIR).

The sediment remedy alternatives that will result in the physical alteration of a wetland resource area (e.g., land under water bodies or waterway) may be subject to MEPA review and the filing of an ENF. Also, given the existence of a mapped Environmental Justice population within one mile of the Pond, the work would likely be considered significant, requiring the filing and review of an EIR. This EIR requirement may be waived, provided the proponent submits an Expanded ENF and demonstrates compliance with the provisions for waiver issuance.



## 5. Limitations

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This report was prepared for the use of the City of Newburyport, exclusively. The findings provided by GEI in this report are based solely on the information provided in this report. Information that was not available to GEI for this report, or variations from the conditions reported by others, may result in a modification of the findings stated above. This report has been prepared in accordance with generally accepted hydrogeological and engineering practices. No other representations and no warranty, express or implied, is made.

## 6. References

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# Tables

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**Table 1. Chemical Testing Results - Phosphorus in Sediment**  
 Investigation Summary, Detailed Alternatives Evaluation, and Recommendations  
 Bartlett Mill Frog Pond  
 Newburyport, Massachusetts

Sediment Core ID:		SD101				SD102				
Sample ID:	Sample Depth (feet):	SD101(0-1)	SD101(1-2)	SD101(2-3)	SD101(3-4.5)	SD101(4.5-6)	SD101(6-12)	SD102(0-1)	SD102(1-2.5)	SD102(2.5-4)
Sample Date:	Sample Date:	11/29/2021	11/29/2021	11/29/2021	11/29/2021	11/29/2021	11/29/2021	11/30/2021	11/30/2021	11/30/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	1500 F+	2000 F+	1200 F+	500 F+	590 F+	1000 F-	1800 F-	2000 F-
Total Solids	%	2540G	47.7	53.9	16.5	17.4	59.8	53.0	50.4	45.8
Sediment Core ID:		SD103				SD104				
Sample ID:	Sample Depth (feet):	SD103(0-1)	SD103(1-2)	SD103(2-3)	SD103(3-5.5)	SD103(5.5-7)	SD104(0-1)	SD104(1-2)	SD104(2-3.5)	SD104(3.5-6)
Sample Date:	Sample Date:	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/29/2021	11/29/2021	11/29/2021	11/29/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	2000 F-	2000 F-	630 F-	1100 F-	1800 F+	1500 F+	2000 F+	510 F+
Total Solids	%	2540G	32.2	47.2	22.0	12.2	36.6	44	48	25.8
Sediment Core ID:		SD105				SD106				
Sample ID:	Sample Depth (feet):	SD105(0-1)	SD105(1-2)	SD105(2-3)	SD105(3-5.5)	SD105(5.5-8)	SD106(0-1)	SD106(1-2.5)	SD106(2.5-4.5)	SD106(4.5-8)
Sample Date:	Sample Date:	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/29/2021	11/29/2021	11/29/2021	11/29/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	1900 F-	1600 F-	640 F-	970 F-	1800 F+	2100 F+	2000 F+	1200 F+
Total Solids	%	2540G	34.1	51.0	16.0	67.2	31.6	35.3	48.7	15.2
Sediment Core ID:		SD107				SD109				
Sample ID:	Sample Depth (feet):	SD107(0-1)	SD107(1-2)	SD107(2-3)	SD107(3-5.5)	SD107(5.5-8)	SD109(0-1)	SD109(1-2.5)	SD109(2.5-4)	SD109(4-7)
Sample Date:	Sample Date:	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/29/2021	11/29/2021	11/29/2021	11/29/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	1200 G	2200 G	1500 G	920 G	1500 F+	1200 F+	1900 F-	960 F-
Total Solids	%	2540G	31.2	44.4	15.8	15.1	34.8	43.8	50.4	14.4
Sediment Core ID:		SD110				SD111				
Sample ID:	Sample Depth (feet):	SD110(0-1)	SD110(1-2.5)	SD110(2.5-4)	SD110(4-6)	SD110(6-8)	SD110(8-9.5)	SD111(0-1)	SD111(1-3)	SD111(3-5)
Sample Date:	Sample Date:	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	800 G	1400 G	450 G	240 G	560 G	650 G	1700 G	1100 G
Total Solids	%	2540G	51.6	56.3	40.6	14.9	63.7	56.4	53	57.9
Sediment Core ID:		SD112				SD111				
Sample ID:	Sample Depth (feet):	SD112(0-1)	SD112(1-2)	SD112(2-3)	SD112(3-3.5)	SD111(0-1)	SD111(1-3)	SD111(3-5)	SD111(5-6)	SD111(6-7)
Sample Date:	Sample Date:	11/29/2021	11/29/2021	11/29/2021	11/29/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021	11/30/2021
Analyte	Units	Method	Method	Method	Method	Method	Method	Method	Method	Method
Total Phosphorous	mg/kg	4500P-E	310 F-	830 F-	1200 F-	650 G	1700 G	1100 G	280 G	240 G
Total Solids	%	2540G	81.1	74	60.9	56.4	53	57.9	20.3	162

**General Notes:**  
 1. mg/kg = milligrams per kilogram.

**Table 2. Chemical Testing Results - Sediment Pre-Characterization Investigation Summary, Detailed Alternatives Evaluation, and Recommendations**  
Berklet Mill Frog Pond  
Newburyport, Massachusetts

Analyte	Method	Units	Reuse Levels for In-State Unlined Landfill		Reuse Levels for In-State Lined Landfill	Sample Depth (feet):		Sample ID:		Turnkey Standards	Sample Date:		Sample Depth (feet):			Sample ID:				
			None	NS		0-3	0-4	SD101(0-3)	SD102(0-4)		SD103(0-3.5)	SD104(0-3.5)	SD105(0-3.5)	SD106(0-4.5)		SD107(0-3)	SD109(0-4)	SD110(0-3)	SD111(0-3.5)	SD112(0-3)
<b>Volatile Organic Compounds (VOCs)</b>																				
Methyl ethyl ketone (2-Butanone)	8260B	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Acetone	8260B	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Total VOCs	8082A	mg/kg	4	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Polychlorinated Biphenyls (PCBs)</b>																				
Total PCBs	8100M	mg/kg	2	50	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Total Petroleum Hydrocarbons (TPH)</b>																				
Total Petroleum Hydrocarbons	8270-SIM	mg/kg	2,500	5000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Semi-Volatile Organic Compounds (SVOCs)</b>																				
1-Methylnaphthalene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
2-Methylnaphthalene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Acenaphthene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Acenaphthylene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Anthracene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Benzo(a)anthracene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Benzo(a)pyrene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Benzo(b)fluoranthene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Benzo(k)fluoranthene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Chrysene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Dibenz(a,h)anthracene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Fluoranthene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Fluorene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Indeno(1,2,3-cd)pyrene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Naphthalene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Phenanthrene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Pyrene	8270-SIM	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Total SVOCs	8270-SIM	mg/kg	100	100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Total Metals</b>																				
Arsenic	3050B	mg/kg	40	40	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Barium	3050B	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Cadmium	3050B	mg/kg	30	80	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Chromium (Total)	3050B	mg/kg	1000	1000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Lead	3050B	mg/kg	100	2000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Mercury	3050B	mg/kg	10	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Selenium	3050B	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Silver	3050B	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
<b>Toxicity Characteristic Leaching Procedure (TCLP)</b>																				
TCLP Lead	1311	mg/L	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None		
% Solids	121.2540G	%	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		

**General Notes:**  
1. Analytes detected in at least one sample are reported here. For a complete list of analytes refer to the laboratory data reports.  
2. < = The analyte was not detected at a concentration above the specified reporting limit.  
3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan (MCP) with revisions effective December 27, 2019.  
4. Reuse levels for in-state unlined and lined landfills, where identified, are cited from the MassDEP Policy # COMM-97-001, dated August 15, 1997.  
5. Turnkey Standards are cited from the Approval Criteria of Turnkey Landfill of Rochester, New Hampshire.  
6. mg/kg = milligrams per kilogram  
7. NS = Not detected above laboratory reporting limit.  
8. ND = No standard has been established for this analyte.  
9. Bold indicates value exceeds the Reuse Level for In-State Unlined or Lined Landfill.

**Qualifying Notes:**  
F+ The result has a high bias due to matrix spike recovery above upper control limits.  
F- The result has a low bias due to matrix spike recovery below lower control limits.  
G The result is estimated due to duplicate precision outside control limits.  
K- The result has a low bias due to blank spike or laboratory control sample recovery below lower control limits.

**Table 3. Shear Vane Testing Results**  
Investigation Summary, Detailed Alternatives Evaluation, and Recommendations  
Bartlet Mall Frog Pond  
Newburyport, Massachusetts

Sediment Core ID: SD101								
Test Date: 11/29/2021								
Height of Water Table (feet): 4.1								
Refusal (feet): 7.6								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
3	4.8	0	4.8	0.7	1	4	0.63	13.08
4	6.4	0.5	5.9	1.8	8.5	4	5.31	111.15
5	8	0.5	7.5	3.4	5.2	3	26	542.80
6	9.6	2	7.6	3.5	4.2	3	21	438.42

Sediment Core ID: SD102								
Test Date: 11/30/2021								
Height of Water Table (feet): 3.9								
Refusal (feet): 7.8								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
5	8	3.5	4.5	0.6	4.8	4	3.00	62.77
5	8	1.2	6.8	2.9	3.8	3	19.0	396.66
5	8	0.2	7.8	3.9	11.2	3	56.0	1169.11

Sediment Core ID: SD105								
Test Date: 11/30/2021								
Height of Water Table (feet): 4								
Refusal (feet): 10.5								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
5	8	3.1	4.9	0.9	3.8	4	2.38	49.69
5	8	1.2	6.8	2.8	1.6	3	8.0	167.02
5	8	0	8	4	2.4	3	12.0	250.52
8	12.8	3	9.8	5.8	5	3	25.0	521.92
8	12.8	2.3	10.5	6.5	6	3	30.0	626.31

Sediment Core ID: SD106								
Test Date: 11/29/2021								
Height of Water Table (feet): 4								
Refusal (feet): 10.8								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
3	4.8	0.7	4.1	0.1	0.2	4	0.125	2.62
4	6.4	0.5	5.9	1.9	2	4	1.25	26.15
4	6.4	0.6	7.4	3.4	7.2	4	4.5	94.15
5	8	0.8	8.8	4.8	3.6	3	18	375.78
6	9.6	0.8	10.6	6.6	2.4	3	12	250.52
7	11.2	0.6	10.8	6.8	6	3	30	626.31

Sediment Core ID: SD107								
Test Date: 11/30/2021								
Height of Water Table (feet): 4.1								
Refusal (feet): 11.2								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
5	8	3.1	4.9	0.8	1	4	0.63	13.08
5	8	1.5	6.5	2.4	5	4	3.13	65.38
5	8	0	8	3.9	3.8	3	19.0	396.66
7	11.2	1.3	9.9	5.8	3.2	3	16.0	334.03
7	11.2	0	11.2	7.1	2.4	3	12.0	250.52

Sediment Core ID: SD109 (Attempt 1 of 2)								
Test Date: 11/29/2021								
Height of Water Table (feet): 4								
Refusal (feet): 10.2								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
3	4.8	0.5	4.3	0.3			Data not usable, wrong vane size used	
4	6.4	1.3	5.1	1.1	0.3	3	1.5	31.32
5	8	1.6	6.4	2.4	0.2	2	2	41.75
6	9.6	1	8.6	4.6	0.4	2	4	83.51
7	11.2	1	10.2	6.2	0.5	2	5	104.38

Sediment Core ID: SD109 (Attempt 2 of 2)								
Test Date: 11/30/2021								
Height of Water Table (feet): 4								
Refusal (feet): Not Encountered (Max Rods)								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
5	8	3	5	1	2	4	1.25	26.15
5	8	1.5	6.5	2.5	6.2	4	3.88	81.08
5	8	0	8	4	2	3	10.0	208.77
8	12.8	3.3	9.5	5.5	2.2	3	11.0	229.65
8	12.8	1.5	11.3	7.3	3.6	3	18.0	375.78
8	12.8	0	12.8	8.8	5	3	25.0	521.92

Sediment Core ID: SD110								
Test Date: 11/30/2021								
Height of Water Table (feet): 4.3								
Refusal (feet): 5.8								
Number of Rods	Total Length of Rods (feet)	Rods Stickup Above Water (feet)	Test Depth Below Top of Water (feet)	Test Depth Below Top of Sediment (feet)	Gage Reading	Vane Size Used	Shear Strength (kPA)	Shear Strength (psf)
3	4.8	0.5	4.3	0	1	4	0.63	13.08
5	8	2.2	5.8	1.5	11.8	4	7.38	154.31

**General Notes:**  
1. kPA = kilopascal.  
2. psf = pounds per square foot.

**Table 4. In-Situ YSI Readings**  
**Investigation Summary, Detailed Alternatives Evaluation, and Recommendations**  
**Bartlett Mall Frog Pond**  
**Newburyport, Massachusetts**

Surface Water Samples from November 30, 2021						
Sample Location:	Temperature (*C)	DO (mg/L)	SC (us/cm)	pH	ORP (mV)	NTU
SW101A	1.1	12.81	61.3	8.26	86.2	11.68
SW101B	1	12.39	61.4	7.02	172.8	11.36
SW102A	0.5	13.99	46.5	6.96	181.6	11.2
SW102B	0.3	13.71	49.1	6.66	191.7	10.7
SW103A	1.4	13.01	40.3	6.74	183.3	11.76
SW103B	1.3	12.46	42.8	6.66	187.2	12.18

A = at the water surface, B = 1 meter deep

Monitoring Well B102(MW) on December 8, 2021 (Depth to Water = 5.58 feet)						
Depth in Well (feet)	Temperature (*C)	DO (mg/L)	SC (us/cm)	pH	ORP (mV)	NTU
6	10.16	0.19	0.065	6.69	-26.6	NTU not an available probe on down-hole YSI
7	10.51	0.15	0.065	7.04	-24.6	
8	11.32	0.15	0.064	6.98	-20.6	
9	12.01	0.14	0.065	6.96	-18.1	
10	12.43	0.14	0.065	6.91	-12.5	
11	12.99	0.14	0.066	6.84	-8	
12	13.31	0.14	0.066	6.75	-7.5	
13	13.42	0.16	0.064	6.74	-4.0	
14	13.55	0.13	0.067	6.76	-3.8	
15	13.64	0.12	0.064	6.7	-4.9	
In Pond Adjacent to Well	3.85	0.034	0.04	6.67	25	

Monitoring Well B103(MW) on December 8, 2021 (Depth to Water = 34.00 feet)						
Depth in Well (feet)	Temperature (*C)	DO (mg/L)	SC (us/cm)	pH	ORP (mV)	NTU
34.5	11.54	0.27	0.129	7.64	-115.4	NTU not an available probe on down-hole YSI
36	11.59	0.16	0.15	7.54	-125.1	
37.5	11.56	0.14	0.269	7.35	-126.1	
39	11.44	0.15	0.377	7.22	-89.6	
40.5	11.40	0.17	0.384	7.17	-80.7	
42	11.38	0.18	0.391	7.13	-73.8	
43.5	11.37	0.19	0.391	7.11	-70.6	
45	11.36	0.19	0.386	7.09	-71.6	
In Pond Adjacent to Well	4.12	-0.07	0.033	6.27	79.7	

Monitoring Well B104(MW) on December 8, 2021 (Depth to Water = 35.31 feet)						
Depth in Well (feet)	Temperature (*C)	DO (mg/L)	SC (us/cm)	pH	ORP (mV)	NTU
37	11.3	0.55	0.507	7.04	230.9	NTU not an available probe on down-hole YSI
38.5	11.39	0.44	0.507	7	217.6	
40	11.48	0.35	0.516	6.98	121.1	
41.5	11.51	0.32	0.524	6.95	208.3	
43	11.52	0.31	0.524	6.93	207.3	
44.5	11.42	0.27	0.52	6.93	201.4	
In Pond Adjacent to Well	4.21	-0.1	0.033	6.27	99.9	

**General Notes:**

1. \*C = degrees Celcius.
2. DO = Dissolved Oxygen
3. SC = Specific Conductivity
4. ORP = Oxidation Reduction Potential
5. NTU = Nephelometric Turbidity Unit
6. mg/L = milligram per liter
7. us/cm = milliSeimens per centimeter
8. mV = millivolts

**Table 5. Chemical Testing Results - Surface Water**  
 Investigation Summary, Detailed Alternatives Evaluation, and Recommendations  
 Bartlett Mall Frog Pond  
 Newburyport, Massachusetts

Analyte	Method	Sample ID:		SW101A	SW101B	SW102A	SW102B	SW103A	SW103B
		Sample Intake Depth (Feet):	Date Sampled:						
<b>Volatile Organic Compounds</b>									
Chloroform	8260B			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Microbiological Analysis</b>									
E. Coli	121,9213D	col/100ml		2.0	86	120	86	70	130
<b>General Chemistry</b>									
Nitrite	44,353.2	mg/L		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Nitrate	44,353.2	mg/L		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nitrate/Nitrite	44,353.2	mg/L		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Nitrogen	107,-	mg/L		1.8	1.8	1.8	1.6	1.8	1.8
Total Kjeldahl	121,4500NH3-H	mg/L		1.75	1.75	1.77	1.61	1.75	1.78
Total Phosphorous	121,4500P-E	mg/L		0.088	0.088	0.099	0.101	0.098	0.096
Chlorophyll A	121,10200H	mg/m3		128	131	144	139	138	139

**General Notes:**

1. In general, analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit.
3. µg/L = micrograms per liter.
4. mg/L = milligrams per liter.
5. mg/m3 = milligrams per cubic meter.
6. col/100ml = coliform colonies per 100 milliliters



**Table 6. Chemical Testing Results - National Pollutant Discharge Elimination System Investigation Summary, Detailed Alternatives Evaluation, and Recommendations**  
**Bartlet Mall Frog Pond**  
**Newburyport, Massachusetts**

					Sample Location:	SW102A
					Sample Depth:	At Surface
					Date Sampled:	11/30/2021
Analyte	Method	Units	NPDES TBEL	NPDES WQBEL		
<b>Inorganics</b>						
Ammonia Nitrogen	4500NH3-BH	mg/L	NS		0.173 J	
Chloride	300.0	ug/L	NS		7200	
Total Residual Chlorine	4500CL-D	mg/L	0.2	0.0075	< 0.01	
Total Suspended Solids	2540D	mg/L	30		25	
<b>Metals</b>						
Antimony	200.8	ug/L	206	640	< 0.42	
Arsenic	200.8	ug/L	104	36	1.78	
Cadmium	200.8	ug/L	10.2	8.80	< 0.05	
Chromium	200.8	ug/L	NS		< 0.17	
Trivalent Chromium	200.8	ug/L	323	100	< 10	
Hexavalent Chromium	7196A	ug/L	323	50	< 3	
Copper	200.8	ug/L	242	3.1	1.77	
Iron	200.7	ug/L	5000	NS	672	
Lead	200.8	ug/L	160	8.1	2.64	
Mercury	245.1	ug/L	0.739	0.94	< 0.09	
Nickel	200.8	ug/L	1450	8.2	< 0.55	
Selenium	200.8	ug/L	235.8	71.0	< 1.73	
Silver	200.8	ug/L	35.1	1.9	< 0.16	
Zinc	200.8	ug/L	420	81	13.38	
Total Cyanide	4500CN-CE	mg/L	178	0.001	< 0.001	
<b>Volatile Organic Compounds (VOCs)</b>						
Non-Halogenated VOCs						
Total BTEX	624.1	ug/L	100		ND	
1,4-Dioxane	624.1-SIM	ug/L	200		< 2.4	
Acetone	624.1	mg/L	7.97		0.0029 J	
Total Phenolics (Phenol)	420.1	ug/L	1080	300.0	< 16	
Halogenated VOCs						
Carbon tetrachloride	624.1	ug/L	4.4	1.6	< 0.24	
1,2-Dichlorobenzene	624.1	ug/L	600		< 0.28	
1,3-Dichlorobenzene	624.1	ug/L	320		< 0.27	
1,4-Dichlorobenzene	624.1	ug/L	5.0		< 0.29	
1,1-Dichloroethane	624.1	ug/L	70		< 0.40	
1,2-Dichloroethane	624.1	ug/L	5.0		< 0.47	
1,1-Dichloroethene	624.1	ug/L	3.2		< 0.31	
Methylene chloride	624.1	ug/L	4.6		< 0.56	
1,1,1-Trichloroethane	624.1	ug/L	200		< 0.29	
1,1,2-Trichloroethane	624.1	ug/L	5.0		< 0.34	
Trichloroethene	624.1	ug/L	5.0		< 0.33	
Tetrachloroethene	624.1	ug/L	5.0	3.3	< 0.26	
cis-1,2-Dichloroethene	624.1	ug/L	70		< 0.17	
Vinyl chloride	624.1	ug/L	2.0		< 0.38	
<b>Semi-Volatile Organic Compounds (SVOCs)</b>						
Non-Halogenated SVOCs						
Total Phthalates	625.1	ug/L	190	NS	ND	
Diethylhexyl Phthalate	625.1	ug/L	101	2.2	< 6.80	
Total Group I Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	625.1-SIM	ug/L	NS	0.0038	< 0.017	
Benzo(a)pyrene	625.1-SIM	ug/L	NS	0.0038	< 0.025	
Benzo(b)fluoranthene	625.1-SIM	ug/L	NS	0.0038	< 0.026	
Benzo(k)fluoranthene	625.1-SIM	ug/L	NS	0.0038	< 0.021	
Chrysene	625.1-SIM	ug/L	NS	0.0038	< 0.018	
Dibenzo(a,h)anthracene	625.1-SIM	ug/L	NS	0.0038	< 0.040	
Indeno(1,2,3-cd)pyrene	625.1-SIM	ug/L	NS	0.0038	< 0.041	
Total Group II PAHs						
Naphthalene	625.1-SIM	ug/L	100		ND	
Halogenated SVOCs			20		0.016 J	
Total Polychlorinated Biphenyls	608.3	ug/L	0.000064		ND	
Pentachlorophenol	625.1-SIM	ug/L	1.0		< 0.034	
<b>Fuels Parameters</b>						
Total Petroleum Hydrocarbons	1664B	mg/L	5.0		2.25 J, B	
Ethanol	1671A	mg/L	NS		< 20	
Methyl tert-Butyl Ether	624.1	ug/L	70	20	< 0.19	
Tert-Butyl Alcohol	624.1	ug/L	120		< 3.9	
Tert-Amyl Methyl Ether	624.1	ug/L	90		< 0.28	

**General Notes:**

- In general, analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
- "<" = The analyte was not detected at a concentration above the specified laboratory method detection limit.
- ND = not detected.
- NS = no standard.
- NPDES = National Pollutant Discharge Elimination System.
- NPDES standards are cited from the General Permit for Remediation Activity Discharges.
- TBEL = Technology-Based Effluent Limit(s) for salt water.
- WQBEL = Water Quality-Based Effluent Limit(s) for salt water.
- ug/L = micrograms per liter.
- mg/L = milligrams per liter.
- BTEX = benzene, toluene, ethylbenzene, and xylenes.

**Qualifying Notes:**

- The reported result is attributed to sampling or laboratory contamination.
- The reported result is below the laboratory reporting limit and is estimated.

**Table 7. Groundwater Elevations**

Investigation Summary, Detailed Alternatives Evaluation, and Recommendations  
Bartlett Mall Frog Pond  
Newburyport, Massachusetts

Monitoring Well ID	Top of PVC Elevation	12/8/2021		12/15/2021	
		Depth to Groundwater (feet)	Groundwater Elevation	Depth to Groundwater (feet)	Groundwater Elevation
B101(MW)	49.22	Dry	Not Measured	Dry	Not Measured
B102(MW)	48.57	5.58	42.99	6.34	42.23
B103(MW)	48.98	34.00	14.98	34.00	14.98
B104(MW)	49.31	35.31	14.00	35.39	13.92

**General Notes:**

1. Top of PVC Elevation surveyed by GEI on December 8, 2021.

**Table 8. Alternatives Evaluation Cost Estimate Summary**  
**Investigation Summary, Detailed Alternatives Evaluation, and Recommendations**  
**Bartlet Mall Frog Pond**  
**Newburyport, Massachusetts**

Alternative	Estimated Costs
<b>Alternative 1: Pond Dewatering, Mechanical Dredge of Pond, Offsite Disposal, and Placement of Fill Material</b>	\$ 4,368,000
20% Contingency	\$ 873,600
<b>Rounded Total</b>	<b>\$ 5,200,000</b>
<b>Alternative 2: Hydraulic Dredge of the Pond, Partial Onsite Reuse of Sediments, Offsite Disposal of Excess Sediments, and Placement of Fill Material</b>	\$ 3,019,900
20% Contingency	\$ 603,980
<b>Rounded Total</b>	<b>\$ 3,620,000</b>
<b>Alternative 3: Pond Dewatering, Removal of Six inches of Sediment, and Liner Installation</b>	\$ 1,191,427
20% Contingency	\$ 238,285
<b>Rounded Total</b>	<b>\$ 1,430,000</b>
<b>Alternative 4: Pond Dewatering, In-Situ Solidification/Stabilization of Sediments, and Placement of Sand Benthic Layer</b>	\$ 1,806,583
20% Contingency	\$ 361,317
<b>Rounded Total</b>	<b>\$ 2,200,000</b>

Notes

1. Cost estimates were not developed for Alternative 5: Chemical Treatment of the Pond since the alternative currently cannot result in a long-term solution.

# Figures

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This Image is from U.S.G.S. Topographic 7.5 Minute Series  
 Newburyport East, MA-NH Quadrangle, 2021 and  
 Newburyport West MA-NH Quadrangle, 2021  
 Datum is North American Vertical Datum of 1988 (NAVD88).  
 Contour Interval is 10 Feet.



Investigation Summary, Detailed Alternatives Evaluation,  
 and Recommendations  
 Bartlet Mall Frog Pond Newburyport, Massachusetts  
 City of Newburyport  
 Newburyport, Massachusetts

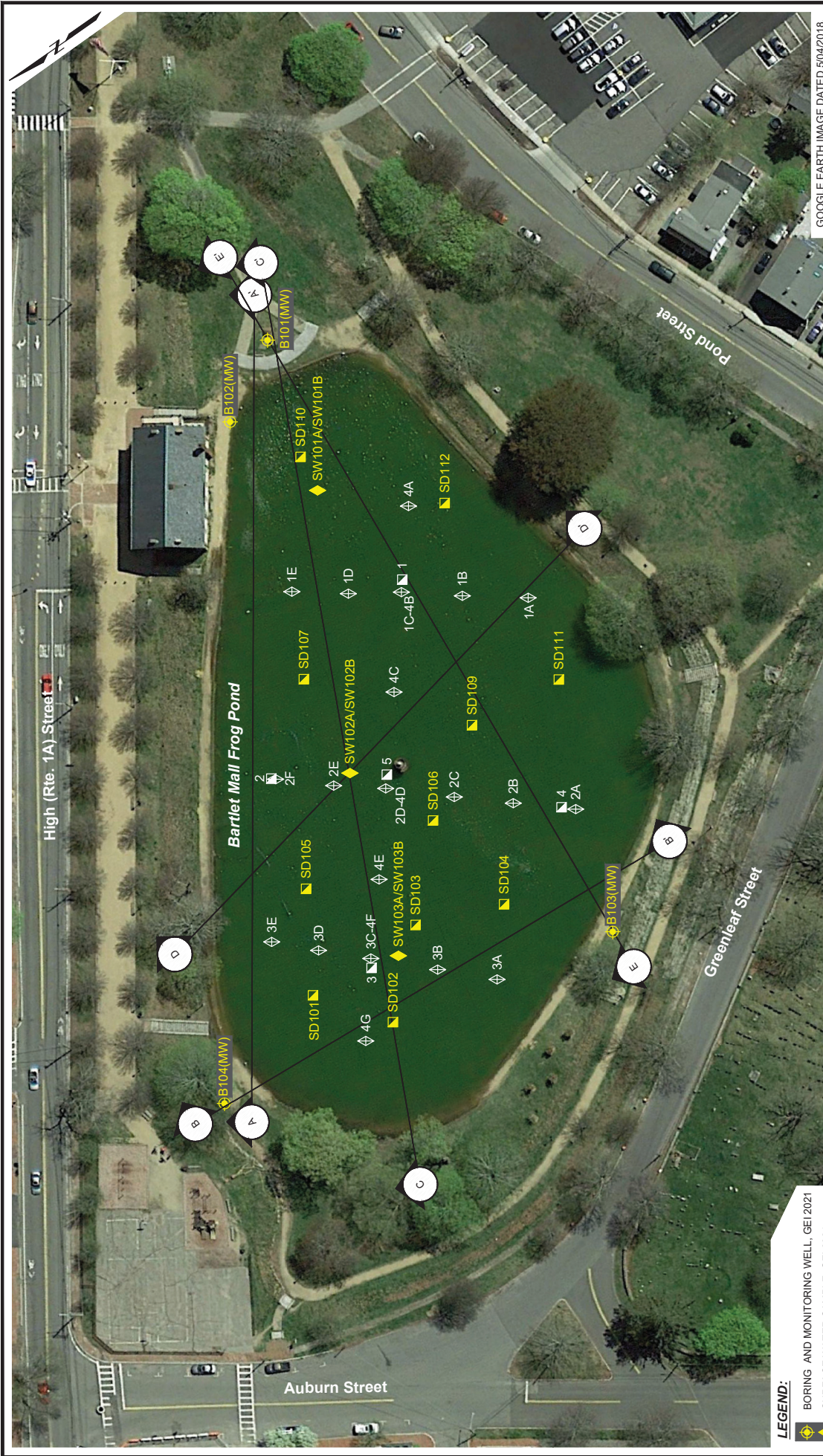


SITE LOCATION MAP

Project 2101333

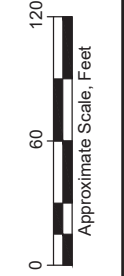
March 2022







Fig. 1



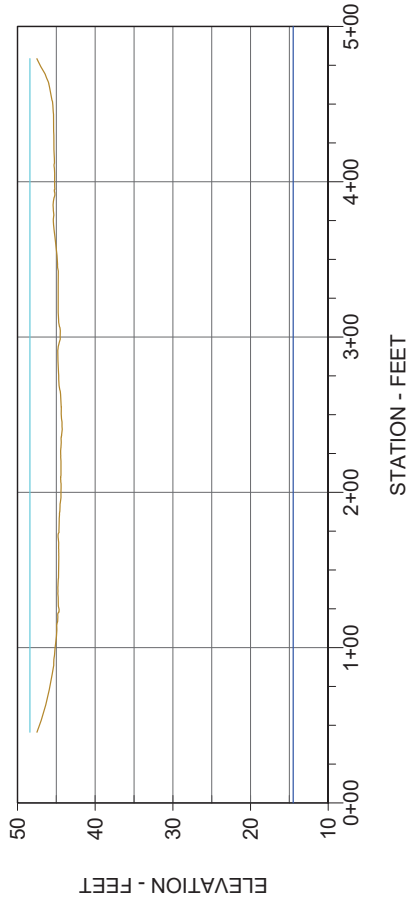
GOOGLE EARTH IMAGE DATED 5/04/2018.

 Investigation Summary, Detailed Alternatives Evaluation, and Recommendations Bartlett Mall Frog Pond Newburyport, Massachusetts	Project 2101333 City of Newburyport Newburyport, Massachusetts	SITE PLAN March 2022 Fig. 2
	CLINGEN, PAUL B. Working/NEWBURYPORT MA, CITY OF 2101333 Bartlett Mall Frog Pond/00_CAD/Figures/IS AE 2022/2101333.02.dwg - 3/4/2022	

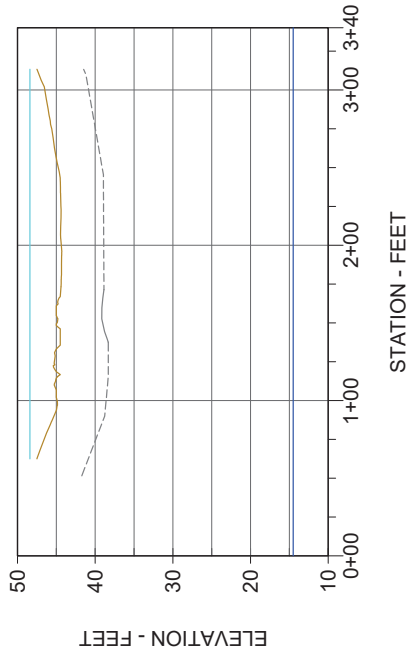


- LEGEND:**
-  BORING AND MONITORING WELL, GEI 2021
  -  SURFACE WATER SAMPLE, GEI 2021
  -  SEDIMENT CORE, GEI 2021
  -  SEDIMENT CORE - HORSLEY WITTEN 2014
  -  SEDIMENT PROBE, HORSLEY WITTEN 2014
  -  CROSS SECTIONS ARE SHOWN ON FIG. 3

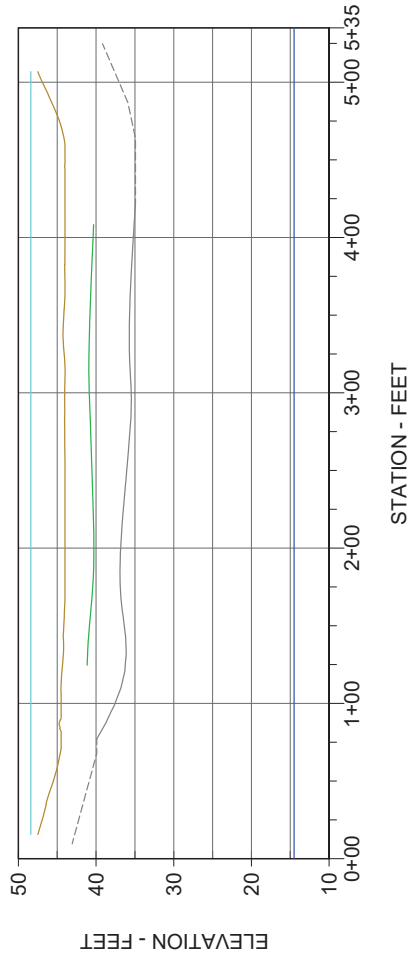
A-A'



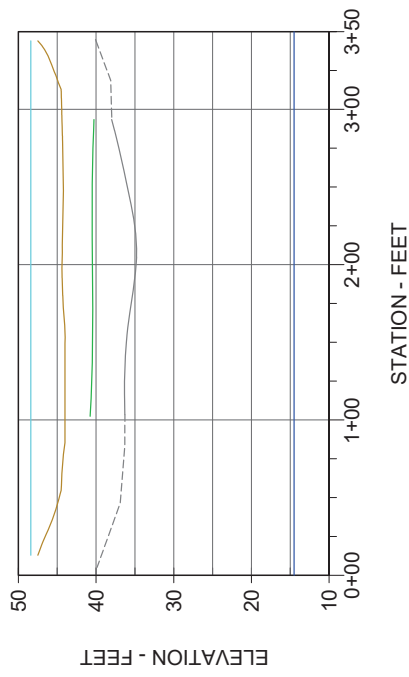
B-B'



C-C'



D-D'



**LEGEND:**

- WATER SURFACE ELEVATION
- TOP OF SEDIMENT
- TOP OF PEAT
- REFUSAL
- APPROXIMATE REGIONAL GROUNDWATER TABLE

Investigation Summary, Detailed Alternatives Evaluation,  
and Recommendations  
Bartlett Mall Frog Pond Newburyport, Massachusetts  
City of Newburyport  
Newburyport, Massachusetts



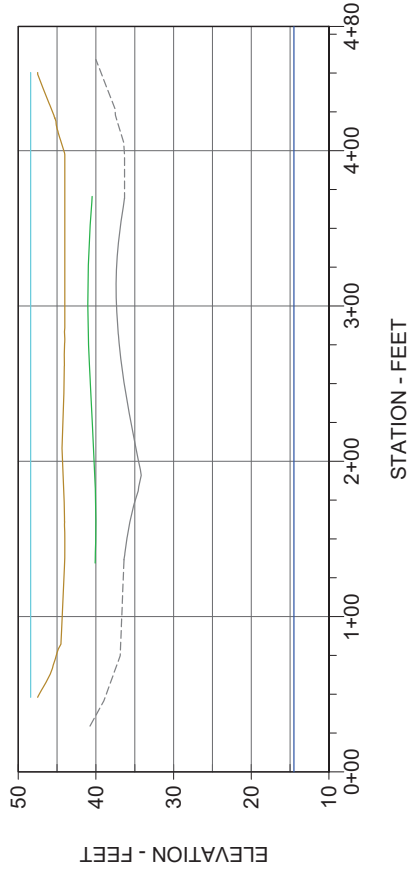
Project 2101333

CROSS SECTIONS

March 2022

Fig. 3A

# E-E'



**LEGEND:**

- WATER SURFACE ELEVATION
- TOP OF SEDIMENT
- TOP OF PEAT
- REFUSAL
- APPROXIMATE REGIONAL GROUNDWATER TABLE

Investigation Summary, Detailed Alternatives Evaluation,  
and Recommendations  
Bartlett Mall Frog Pond Newburyport, Massachusetts  
City of Newburyport  
Newburyport, Massachusetts



Project 2101333

CROSS SECTIONS  
March 2022  
Fig. 3B



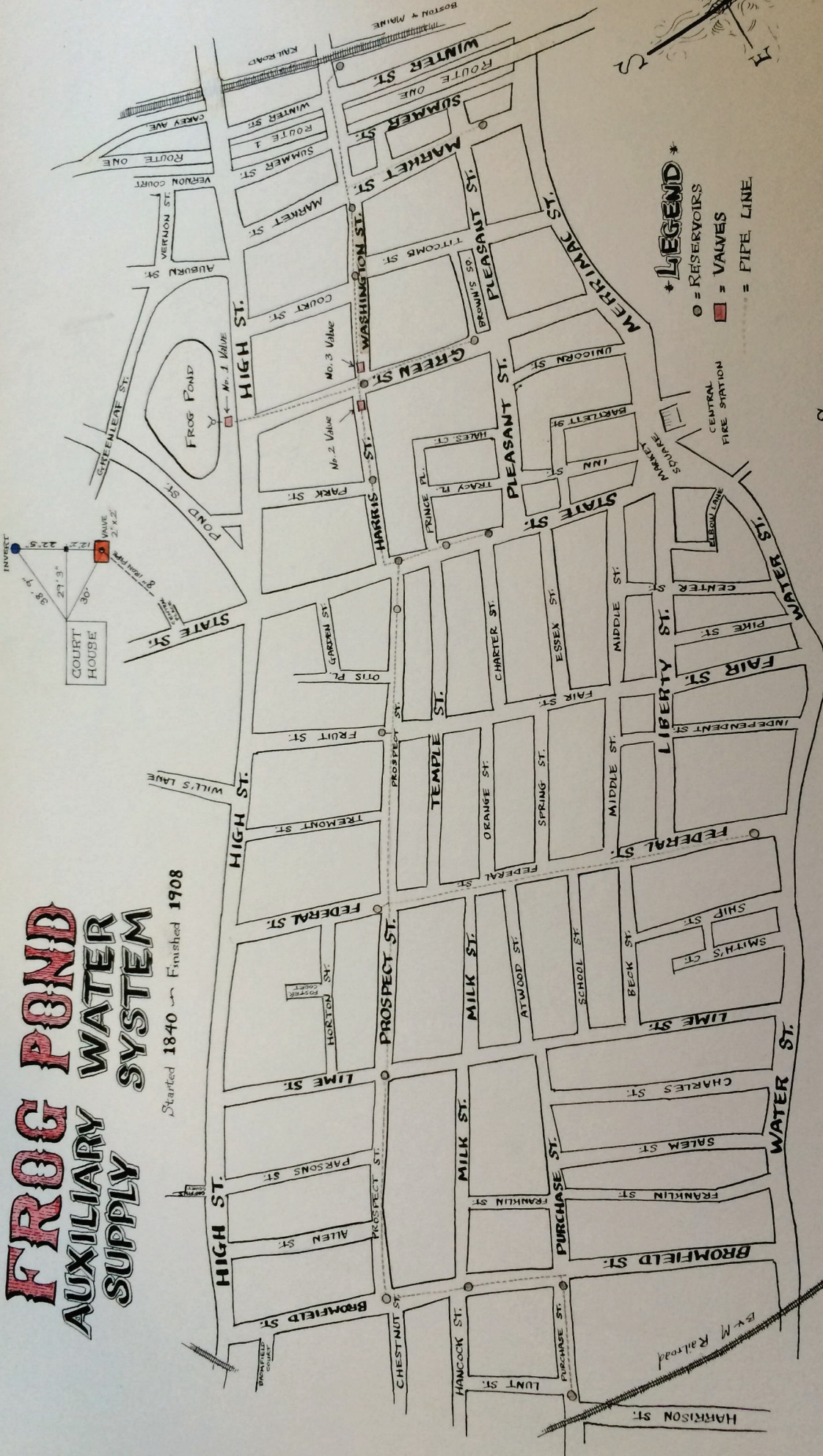
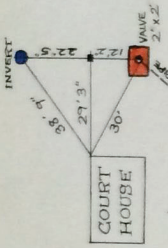
# Appendix A

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## Map of Auxiliary Water System

# FROG POND AUXILIARY WATER SUPPLY SYSTEM

Started 1840 - Finished 1908



**LEGEND \***  
 ○ = RESERVOIRS  
 □ = VALVES  
 --- = PIPE LINE

SCALE 1 INCH = APPROX. 200 FT.

# Appendix B

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## Sediment Core Logs

<b>BORING INFORMATION</b>				<b>BORING</b>  <b>SD101</b>  <b>PAGE 1 of 2</b>	
LOCATION: Bartlet Mall Frog Pond		DATE START/END: 11/29/2021 - 11/29/2021			
GROUND SURFACE EL. (ft): 44.5		DRILLING COMPANY: TG&B Marine Services			
VERTICAL DATUM: NAD 88		DRILLER NAME: Jeff/Jim/Ben/Jake			
TOTAL DEPTH (ft): 12.5		RIG TYPE: Vibracore on Catamaran Boat			
LOGGED BY: C. Saledas					

<b>DRILLING INFORMATION</b>					
HAMMER TYPE: NA		CASING I.D./O.D.: 2.625 inch / 2.75 inch		CORE BARREL TYPE: NA	
AUGER I.D./O.D.: NA / NA		DRILL ROD O.D.: NA inch		CORE BARREL I.D./O.D.: NA / NA	
DRILLING METHOD: Vibracore/Direct Push					
WATER LEVEL DEPTHS (ft): Not measured					

<b>ABBREVIATIONS:</b>					
Pen. = Penetration Length		S = Split Spoon Sample		Qp = Pocket Penetrometer Strength	
Rec. = Recovery Length		C = Core Sample		Sv = Pocket Torvane Shear Strength	
RQD = Rock Quality Designation		U = Undisturbed Sample		LL = Liquid Limit	
= Length of Sound Cores > 4 in / Pen., %		SC = Sonic Core		PI = Plasticity Index	
WOR = Weight of Rods		DP = Direct Push Sample		PID = Photoionization Detector	
WOH = Weight of Hammer		HSA = Hollow-Stem Auger		I.D./O.D. = Inside Diameter/Outside Diameter	
NA, NM = Not Applicable, Not Measured					
Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.					

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 12.5	150/132		0-3': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
						3-6': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	3-6': SANDY ORGANIC SOIL (OL); ~60% medium-plastic fines, ~40% fine sand, dark brown, fibrous organic material (leaves, roots, wood fragments) throughout, PEAT.
						6-12.5': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	6-12.5': SANDY SILT (ML); ~70% low-plastic fines, ~30% fine sand, light brown, some organics.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.14'.		<b>PROJECT NAME:</b> Bartlet Mall Frog Pond	
		<b>CITY/STATE:</b> Newburyport, Massachusetts	
		<b>GEI PROJECT NUMBER:</b> 2101333	
			

GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

LOCATION: Bartlet Mall Frog Pond

GROUND SURFACE EL. (ft): 44.5

VERTICAL DATUM: NAD 88

DATE START/END: 11/29/2021 - 11/29/2021

DRILLING COMPANY: TG&B Marine Services

**BORING**

**SD101**

PAGE 2 of 2

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
							ML	
								Bottom of vibracore at 12.5 ft. Reached limit of equipment.
30	15							
25	20							

NOTES: Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.14'.

PROJECT NAME: Bartlet Mall Frog Pond

CITY/STATE: Newburyport, Massachusetts

GEI PROJECT NUMBER: 2101333



GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD102 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 45	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 4.5	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 4.5	54/48		0-4.5': PID: 0.0ppm, H2S Meter: 0.1ppm	ML	0-4.5': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky, some fibrous organic material (leaves and wood fragments) in bottom 6".
40	5							Bottom of vibracore at 4.5 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 3.90'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD103 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 7.5	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 7.5	90/84		0-3': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
						3-3.5': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	3-3.5': SANDY ORGANIC SOIL (OL); ~80% low-plastic fines, ~20% fine sand, gray, sticky, some fibrous organic material (leaves and wood fragments) throughout, brown. 3.5-7.5': SANDY ORGANIC SOIL (OL); ~60% medium-plastic fines, ~40% fine sand, dark brown, fibrous organic material (leaves, roots, wood fragments) throughout, PEAT.
						3-7.5': PID: 0.1ppm, H2S Meter: 0.0ppm		
								Bottom of vibracore at 7.5 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.30'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD104 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/29/2021 - 11/29/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 8.3	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 8.3	99/90		0-3.5': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3.5': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
40						3.5-6': PID: 0.0ppm, H2S Meter: 0.0ppm		3.5-6': ORGANIC SOIL WITH SAND (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown.
5						6-8.3': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	6-8.3': SANDY ORGANIC SOIL (OL); ~50% fine to medium sand, ~40% medium-plastic fines, ~10% subrounded and subangular gravel up to 1.5", brown, fibrous organic material (leaves, roots, wood fragments) throughout.
35								Bottom of vibracore at 8.3 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.06'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22



<b>BORING INFORMATION</b>		<b>BORING SD105 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 7.5	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 7.5	90/78		0-3.5': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3.5': SANDY SILT (ML); ~70% low-plastic fines, ~20% fine sand, ~10% subangular gravel up to 2", gray, sticky, fibrous organic material (roots) throughout.
40						3.5-7.5': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	3.5-6.5': SANDY ORGANIC SOIL (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
	5						ML	6.5-7.5': SANDY SILT (ML); ~70% low-plastic fines, ~30% fine sand, light brown, some organics.
35								Bottom of vibracore at 7.5 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.23'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD106 PAGE 1 of 1</b>
LOCATION: Bartlet Mall Frog Pond	DATE START/END: 11/29/2021 - 11/29/2021	
GROUND SURFACE EL. (ft): 44	DRILLING COMPANY: TG&B Marine Services	
VERTICAL DATUM: NAD 88	DRILLER NAME: Jeff/Jim/Ben/Jake	
TOTAL DEPTH (ft): 6.5	RIG TYPE: Vibracore on Catamaran Boat	
LOGGED BY: C. Saledas		

<b>DRILLING INFORMATION</b>		
HAMMER TYPE: NA	CASING I.D./O.D.: 2.625 inch / 2.75 inch	CORE BARREL TYPE: NA
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NA inch	CORE BARREL I.D./O.D.: NA / NA
DRILLING METHOD: Vibracore/Direct Push		
WATER LEVEL DEPTHS (ft): Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 6.5	78/70		0-4.5': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-4.5': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
	5					4.5-6.5': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	4.5-6.5': ORGANIC LAYER/PEAT (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
								Bottom of vibracore at 6.5 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.38'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING</b>  <b>SD107</b>  PAGE 1 of 1
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 44.5	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 8.5	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

<b>ABBREVIATIONS:</b>	Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 8.5	102/96		0-3': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3': SANDY SILT (ML); ~70% low-plastic fines, ~20% fine sand, ~10% subangular gravel up to 2", gray, sticky, organic material (roots) throughout.
						3-8.5': PID: 0.0ppm, H2S Meter: 0.1ppm	OL	3-8.5': SANDY ORGANIC SOIL (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
40	5							
35								Bottom of vibracore at 8.5 ft. Refusal.

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.40'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond	
	<b>CITY/STATE:</b> Newburyport, Massachusetts	
	<b>GEI PROJECT NUMBER:</b> 2101333	

GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD109 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/29/2021 - 11/29/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 10.8	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 10.8	130/126		0-4': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-4': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
40						4-10.8': PID: 0.0ppm, H2S Meter: 0.0ppm		4-7': SANDY ORGANIC SOIL (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
5							OL	7-10.8': SANDY ORGANIC SOIL (OL); ~70% low-plastic fines, ~30% fine sand, light brown, some organics, PEAT.
35								
10								
								Bottom of vibracore at 10.8 ft. Reached limit of equipment.

<p><b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.13'.</p>	<p><b>PROJECT NAME:</b> Bartlet Mall Frog Pond</p> <p><b>CITY/STATE:</b> Newburyport, Massachusetts</p> <p><b>GEI PROJECT NUMBER:</b> 2101333</p>
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD110 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 9.2	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 9.2	110/102		0-4': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-4': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky, some fibrous organic material in bottom 1'.
40						4-8': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	4-8': ORGANIC LAYER/PEAT (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
	5					8-9.2': PID: 0.0ppm, H2S Meter: 0.0ppm	SM	8-9.2': SILTY SAND (SM); ~60% fine to medium sand, ~30% low-plastic fines, ~10% subrounded to subangular gravel, brown.
35								Bottom of vibracore at 9.2 ft. Refusal.

<p><b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 4.40'.</p>	<p><b>PROJECT NAME:</b> Bartlet Mall Frog Pond</p> <p><b>CITY/STATE:</b> Newburyport, Massachusetts</p> <p><b>GEI PROJECT NUMBER:</b> 2101333</p>
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING SD111 PAGE 1 of 1</b>
<b>LOCATION:</b> Bartlet Mall Frog Pond	<b>DATE START/END:</b> 11/30/2021 - 11/30/2021	
<b>GROUND SURFACE EL. (ft):</b> 44	<b>DRILLING COMPANY:</b> TG&B Marine Services	
<b>VERTICAL DATUM:</b> NAD 88	<b>DRILLER NAME:</b> Jeff/Jim/Ben/Jake	
<b>TOTAL DEPTH (ft):</b> 7.5	<b>RIG TYPE:</b> Vibracore on Catamaran Boat	
<b>LOGGED BY:</b> C. Saledas		

<b>DRILLING INFORMATION</b>		
<b>HAMMER TYPE:</b> NA	<b>CASING I.D./O.D.:</b> 2.625 inch / 2.75 inch	<b>CORE BARREL TYPE:</b> NA
<b>AUGER I.D./O.D.:</b> NA / NA	<b>DRILL ROD O.D.:</b> NA inch	<b>CORE BARREL I.D./O.D.:</b> NA / NA
<b>DRILLING METHOD:</b> Vibracore/Direct Push		
<b>WATER LEVEL DEPTHS (ft):</b> Not measured		

**ABBREVIATIONS:**

Pen. = Penetration Length	S = Split Spoon Sample	Qp = Pocket Penetrometer Strength	NA, NM = Not Applicable, Not Measured
Rec. = Recovery Length	C = Core Sample	Sv = Pocket Torvane Shear Strength	Blows per 6 in.: 140-lb hammer falling
RQD = Rock Quality Designation	U = Undisturbed Sample	LL = Liquid Limit	30 inches to drive a 2-inch-O.D.
= Length of Sound Cores > 4 in / Pen., %	SC = Sonic Core	PI = Plasticity Index	split spoon sampler.
WOR = Weight of Rods	DP = Direct Push Sample	PID = Photoionization Detector	
WOH = Weight of Hammer	HSA = Hollow-Stem Auger	I.D./O.D. = Inside Diameter/Outside Diameter	

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 7.5	90/84		0-3.5': PID: 0.0ppm, H2S Meter: 0.0ppm	ML	0-3.5': SANDY SILT (ML); ~80% low-plastic fines, ~20% fine sand, gray, sticky.
40						3.5-5': PID: 0.0ppm, H2S Meter: 0.0ppm		3.5-5': SANDY SILT WITH ORGANICS (OL); ~80% low-plastic fines, ~20% fine sand, gray, sticky, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
	5					5-7.5': PID: 0.0ppm, H2S Meter: 0.0ppm	OL	5-7.5': SANDY ORGANIC SOIL (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
35								Bottom of vibracore at 7.5 ft. Refusal.

<p><b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 3.99'.</p>	<p><b>PROJECT NAME:</b> Bartlet Mall Frog Pond</p> <p><b>CITY/STATE:</b> Newburyport, Massachusetts</p> <p><b>GEI PROJECT NUMBER:</b> 2101333</p>
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

<b>BORING INFORMATION</b>		<b>BORING</b>  <b>SD112</b>  <b>PAGE 1 of 1</b>
LOCATION: Bartlet Mall Frog Pond		
GROUND SURFACE EL. (ft): 44.5	DATE START/END: 11/29/2021 - 11/29/2021	
VERTICAL DATUM: NAD 88	DRILLING COMPANY: TG&B Marine Services	
TOTAL DEPTH (ft): 5.0	DRILLER NAME: Jeff/Jim/Ben/Jake	
LOGGED BY: C. Saledas	RIG TYPE: Vibracore on Catamaran Boat	

<b>DRILLING INFORMATION</b>		
HAMMER TYPE: NA	CASING I.D./O.D.: 2.625 inch / 2.75 inch	CORE BARREL TYPE: NA
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NA inch	CORE BARREL I.D./O.D.: NA / NA
DRILLING METHOD: Vibracore/Direct Push		
WATER LEVEL DEPTHS (ft): Not measured		

<b>ABBREVIATIONS:</b>	Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./Rec. (in)	Blows per 6 in. or RQD			
		1	0 to 5	60/42		0-1': PID: 0.0ppm	SW-SM	0-1': WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, ~25% subrounded and subangular gravel up to 3.5", ~15% non-plastic fines, gray brown.
						1-1.5': PID: 0.0ppm	ML	1-1.5': SANDY SILT (ML); ~70% low-plastic fines, ~30% fine sand, gray.
						1.5-2': PID: 0.0ppm	SW-SM	1.5-2': WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% sand, ~25% subrounded and subangular gravel up to 3.5", ~15% non-plastic fines, gray brown.
						2-3': PID: 0.0ppm	ML	2-3': SANDY SILT WITH GRAVEL (ML); ~60% non-plastic fines, ~25% widely graded sand, ~15% subrounded to subangular gravel up to 1.5", gray to gray brown.
						3-5': PID: 0.0ppm	OL	3-5': SANDY ORGANIC SOIL (OL); ~60% low-plastic fines, ~40% fine sand, dark brown, spongy, some fibrous organic material (leaves and wood fragments) throughout, brown, PEAT.
40	5							Bottom of vibracore at 5 ft. Refusal.
35								

<b>NOTES:</b> Ground surface elevation is the top of sediment elevation from the bathymetric survey. Height of water above the sediment is 3.92'.	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond  <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333	 <b>GEI</b> Consultants
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GEI WOBURN STD 1-LOCATION-LAYER NAME SD101-SD112\_EDITS.GPJ 3/7/22

## Appendix C

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### Sediment Laboratory Data Reports





## ANALYTICAL REPORT

Lab Number:	L2165441
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/20/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165441-01	2101333-SD101(0-3')	SOIL	NEWBURYPORT, MA	11/29/21 15:50	11/30/21
L2165441-02	2101333-SD104(0-3.5')	SOIL	NEWBURYPORT, MA	11/29/21 15:00	11/30/21
L2165441-03	2101333-SD106(0-4.5')	SOIL	NEWBURYPORT, MA	11/29/21 14:00	11/30/21
L2165441-04	2101333-SD109(0-4')	SOIL	NEWBURYPORT, MA	11/29/21 12:55	11/30/21
L2165441-05	2101333-SD112(0-3')	SOIL	NEWBURYPORT, MA	11/29/21 11:50	11/30/21



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Case Narrative

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

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

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

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

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

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

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**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Case Narrative (continued)

#### Report Revision

December 20, 2021: The Client ID was amended on L2165441-04.

#### Report Submission

December 17, 2021: This final report includes the results of all requested analyses.

December 16, 2021: This is a preliminary report.

#### Volatile Organics

L2165441-04: The surrogate recovery for 4-bromofluorobenzene (132%) was outside the acceptance criteria; however, re-analysis results: the internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (46%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

#### Petroleum Hydrocarbon Quantitation

The WG1581675-3 Laboratory Duplicate RPD for tph (c10-c36) (42%), performed on L2165441-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 12/20/21

# ORGANICS

# VOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/09/21 11:29  
 Analyst: AJK  
 Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	4.5	--	1
1,1-Dichloroethane	ND		ug/kg	0.91	--	1
Chloroform	ND		ug/kg	1.4	--	1
Carbon tetrachloride	ND		ug/kg	0.91	--	1
1,2-Dichloropropane	ND		ug/kg	0.91	--	1
Dibromochloromethane	ND		ug/kg	0.91	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.91	--	1
Tetrachloroethene	ND		ug/kg	0.45	--	1
Chlorobenzene	ND		ug/kg	0.45	--	1
Trichlorofluoromethane	ND		ug/kg	3.6	--	1
1,2-Dichloroethane	ND		ug/kg	0.91	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.45	--	1
Bromodichloromethane	ND		ug/kg	0.45	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.91	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.45	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.45	--	1
1,1-Dichloropropene	ND		ug/kg	0.45	--	1
Bromoform	ND		ug/kg	3.6	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.45	--	1
Benzene	ND		ug/kg	0.45	--	1
Toluene	ND		ug/kg	0.91	--	1
Ethylbenzene	ND		ug/kg	0.91	--	1
Chloromethane	ND		ug/kg	3.6	--	1
Bromomethane	ND		ug/kg	1.8	--	1
Vinyl chloride	ND		ug/kg	0.91	--	1
Chloroethane	ND		ug/kg	1.8	--	1
1,1-Dichloroethene	ND		ug/kg	0.91	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165441

Project Number: 2101333

Report Date: 12/20/21

## SAMPLE RESULTS

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.45	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.8	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.8	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.8	--	1
Methyl tert butyl ether	ND		ug/kg	1.8	--	1
p/m-Xylene	ND		ug/kg	1.8	--	1
o-Xylene	ND		ug/kg	0.91	--	1
Xylenes, Total	ND		ug/kg	0.91	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.91	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.91	--	1
Dibromomethane	ND		ug/kg	1.8	--	1
1,4-Dichlorobutane	ND		ug/kg	9.1	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.8	--	1
Styrene	ND		ug/kg	0.91	--	1
Dichlorodifluoromethane	ND		ug/kg	9.1	--	1
Acetone	130		ug/kg	23	--	1
Carbon disulfide	ND		ug/kg	9.1	--	1
2-Butanone	28		ug/kg	9.1	--	1
Vinyl acetate	ND		ug/kg	9.1	--	1
4-Methyl-2-pentanone	ND		ug/kg	9.1	--	1
2-Hexanone	ND		ug/kg	9.1	--	1
Ethyl methacrylate	ND		ug/kg	9.1	--	1
Acrylonitrile	ND		ug/kg	3.6	--	1
Bromochloromethane	ND		ug/kg	1.8	--	1
Tetrahydrofuran	ND		ug/kg	3.6	--	1
2,2-Dichloropropane	ND		ug/kg	1.8	--	1
1,2-Dibromoethane	ND		ug/kg	0.91	--	1
1,3-Dichloropropane	ND		ug/kg	1.8	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.45	--	1
Bromobenzene	ND		ug/kg	1.8	--	1
n-Butylbenzene	ND		ug/kg	0.91	--	1
sec-Butylbenzene	ND		ug/kg	0.91	--	1
tert-Butylbenzene	ND		ug/kg	1.8	--	1
o-Chlorotoluene	ND		ug/kg	1.8	--	1
p-Chlorotoluene	ND		ug/kg	1.8	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.7	--	1
Hexachlorobutadiene	ND		ug/kg	3.6	--	1



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	0.91	--	1
p-Isopropyltoluene	ND		ug/kg	0.91	--	1
Naphthalene	ND		ug/kg	3.6	--	1
n-Propylbenzene	ND		ug/kg	0.91	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.8	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.8	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.8	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.8	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.5	--	1
Ethyl ether	ND		ug/kg	1.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	104		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 01:56  
 Analyst: MV  
 Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	6.3	--	1
1,1-Dichloroethane	ND		ug/kg	1.3	--	1
Chloroform	ND		ug/kg	1.9	--	1
Carbon tetrachloride	ND		ug/kg	1.3	--	1
1,2-Dichloropropane	ND		ug/kg	1.3	--	1
Dibromochloromethane	ND		ug/kg	1.3	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.3	--	1
Tetrachloroethene	ND		ug/kg	0.63	--	1
Chlorobenzene	ND		ug/kg	0.63	--	1
Trichlorofluoromethane	ND		ug/kg	5.1	--	1
1,2-Dichloroethane	ND		ug/kg	1.3	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.63	--	1
Bromodichloromethane	ND		ug/kg	0.63	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.3	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.63	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.63	--	1
1,1-Dichloropropene	ND		ug/kg	0.63	--	1
Bromoform	ND		ug/kg	5.1	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.63	--	1
Benzene	ND		ug/kg	0.63	--	1
Toluene	ND		ug/kg	1.3	--	1
Ethylbenzene	ND		ug/kg	1.3	--	1
Chloromethane	ND		ug/kg	5.1	--	1
Bromomethane	ND		ug/kg	2.5	--	1
Vinyl chloride	ND		ug/kg	1.3	--	1
Chloroethane	ND		ug/kg	2.5	--	1
1,1-Dichloroethene	ND		ug/kg	1.3	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.9	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165441

Project Number: 2101333

Report Date: 12/20/21

## SAMPLE RESULTS

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.63	--	1
1,2-Dichlorobenzene	ND		ug/kg	2.5	--	1
1,3-Dichlorobenzene	ND		ug/kg	2.5	--	1
1,4-Dichlorobenzene	ND		ug/kg	2.5	--	1
Methyl tert butyl ether	ND		ug/kg	2.5	--	1
p/m-Xylene	ND		ug/kg	2.5	--	1
o-Xylene	ND		ug/kg	1.3	--	1
Xylenes, Total	ND		ug/kg	1.3	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.3	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.3	--	1
Dibromomethane	ND		ug/kg	2.5	--	1
1,4-Dichlorobutane	ND		ug/kg	13	--	1
1,2,3-Trichloropropane	ND		ug/kg	2.5	--	1
Styrene	ND		ug/kg	1.3	--	1
Dichlorodifluoromethane	ND		ug/kg	13	--	1
Acetone	52		ug/kg	32	--	1
Carbon disulfide	ND		ug/kg	13	--	1
2-Butanone	ND		ug/kg	13	--	1
Vinyl acetate	ND		ug/kg	13	--	1
4-Methyl-2-pentanone	ND		ug/kg	13	--	1
2-Hexanone	ND		ug/kg	13	--	1
Ethyl methacrylate	ND		ug/kg	13	--	1
Acrylonitrile	ND		ug/kg	5.1	--	1
Bromochloromethane	ND		ug/kg	2.5	--	1
Tetrahydrofuran	ND		ug/kg	5.1	--	1
2,2-Dichloropropane	ND		ug/kg	2.5	--	1
1,2-Dibromoethane	ND		ug/kg	1.3	--	1
1,3-Dichloropropane	ND		ug/kg	2.5	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.63	--	1
Bromobenzene	ND		ug/kg	2.5	--	1
n-Butylbenzene	ND		ug/kg	1.3	--	1
sec-Butylbenzene	ND		ug/kg	1.3	--	1
tert-Butylbenzene	ND		ug/kg	2.5	--	1
o-Chlorotoluene	ND		ug/kg	2.5	--	1
p-Chlorotoluene	ND		ug/kg	2.5	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.8	--	1
Hexachlorobutadiene	ND		ug/kg	5.1	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.3	--	1
p-Isopropyltoluene	ND		ug/kg	1.3	--	1
Naphthalene	ND		ug/kg	5.1	--	1
n-Propylbenzene	ND		ug/kg	1.3	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.5	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.5	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.5	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.5	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	6.3	--	1
Ethyl ether	ND		ug/kg	2.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	112		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/09/21 12:23  
 Analyst: AJK  
 Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	10	--	1
1,1-Dichloroethane	ND		ug/kg	2.1	--	1
Chloroform	ND		ug/kg	3.1	--	1
Carbon tetrachloride	ND		ug/kg	2.1	--	1
1,2-Dichloropropane	ND		ug/kg	2.1	--	1
Dibromochloromethane	ND		ug/kg	2.1	--	1
1,1,2-Trichloroethane	ND		ug/kg	2.1	--	1
Tetrachloroethene	ND		ug/kg	1.0	--	1
Chlorobenzene	ND		ug/kg	1.0	--	1
Trichlorofluoromethane	ND		ug/kg	8.4	--	1
1,2-Dichloroethane	ND		ug/kg	2.1	--	1
1,1,1-Trichloroethane	ND		ug/kg	1.0	--	1
Bromodichloromethane	ND		ug/kg	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/kg	2.1	--	1
cis-1,3-Dichloropropene	ND		ug/kg	1.0	--	1
1,3-Dichloropropene, Total	ND		ug/kg	1.0	--	1
1,1-Dichloropropene	ND		ug/kg	1.0	--	1
Bromoform	ND		ug/kg	8.4	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	--	1
Benzene	ND		ug/kg	1.0	--	1
Toluene	ND		ug/kg	2.1	--	1
Ethylbenzene	ND		ug/kg	2.1	--	1
Chloromethane	ND		ug/kg	8.4	--	1
Bromomethane	ND		ug/kg	4.2	--	1
Vinyl chloride	ND		ug/kg	2.1	--	1
Chloroethane	ND		ug/kg	4.2	--	1
1,1-Dichloroethene	ND		ug/kg	2.1	--	1
trans-1,2-Dichloroethene	ND		ug/kg	3.1	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165441

Project Number: 2101333

Report Date: 12/20/21

## SAMPLE RESULTS

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	1.0	--	1
1,2-Dichlorobenzene	ND		ug/kg	4.2	--	1
1,3-Dichlorobenzene	ND		ug/kg	4.2	--	1
1,4-Dichlorobenzene	ND		ug/kg	4.2	--	1
Methyl tert butyl ether	ND		ug/kg	4.2	--	1
p/m-Xylene	ND		ug/kg	4.2	--	1
o-Xylene	ND		ug/kg	2.1	--	1
Xylenes, Total	ND		ug/kg	2.1	--	1
cis-1,2-Dichloroethene	ND		ug/kg	2.1	--	1
1,2-Dichloroethene, Total	ND		ug/kg	2.1	--	1
Dibromomethane	ND		ug/kg	4.2	--	1
1,4-Dichlorobutane	ND		ug/kg	21	--	1
1,2,3-Trichloropropane	ND		ug/kg	4.2	--	1
Styrene	ND		ug/kg	2.1	--	1
Dichlorodifluoromethane	ND		ug/kg	21	--	1
Acetone	340		ug/kg	52	--	1
Carbon disulfide	ND		ug/kg	21	--	1
2-Butanone	73		ug/kg	21	--	1
Vinyl acetate	ND		ug/kg	21	--	1
4-Methyl-2-pentanone	ND		ug/kg	21	--	1
2-Hexanone	ND		ug/kg	21	--	1
Ethyl methacrylate	ND		ug/kg	21	--	1
Acrylonitrile	ND		ug/kg	8.4	--	1
Bromochloromethane	ND		ug/kg	4.2	--	1
Tetrahydrofuran	ND		ug/kg	8.4	--	1
2,2-Dichloropropane	ND		ug/kg	4.2	--	1
1,2-Dibromoethane	ND		ug/kg	2.1	--	1
1,3-Dichloropropane	ND		ug/kg	4.2	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	--	1
Bromobenzene	ND		ug/kg	4.2	--	1
n-Butylbenzene	ND		ug/kg	2.1	--	1
sec-Butylbenzene	ND		ug/kg	2.1	--	1
tert-Butylbenzene	ND		ug/kg	4.2	--	1
o-Chlorotoluene	ND		ug/kg	4.2	--	1
p-Chlorotoluene	ND		ug/kg	4.2	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	6.3	--	1
Hexachlorobutadiene	ND		ug/kg	8.4	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	2.1	--	1
p-Isopropyltoluene	ND		ug/kg	2.1	--	1
Naphthalene	ND		ug/kg	8.4	--	1
n-Propylbenzene	ND		ug/kg	2.1	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	4.2	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	4.2	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	4.2	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	4.2	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	10	--	1
Ethyl ether	ND		ug/kg	4.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	110		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/09/21 12:51  
 Analyst: AJK  
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	5.1	--	1
1,1-Dichloroethane	ND		ug/kg	1.0	--	1
Chloroform	ND		ug/kg	1.5	--	1
Carbon tetrachloride	ND		ug/kg	1.0	--	1
1,2-Dichloropropane	ND		ug/kg	1.0	--	1
Dibromochloromethane	ND		ug/kg	1.0	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.0	--	1
Tetrachloroethene	ND		ug/kg	0.51	--	1
Chlorobenzene	ND		ug/kg	0.51	--	1
Trichlorofluoromethane	ND		ug/kg	4.1	--	1
1,2-Dichloroethane	ND		ug/kg	1.0	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.51	--	1
Bromodichloromethane	ND		ug/kg	0.51	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.51	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.51	--	1
1,1-Dichloropropene	ND		ug/kg	0.51	--	1
Bromoform	ND		ug/kg	4.1	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.51	--	1
Benzene	ND		ug/kg	0.51	--	1
Toluene	ND		ug/kg	1.0	--	1
Ethylbenzene	ND		ug/kg	1.0	--	1
Chloromethane	ND		ug/kg	4.1	--	1
Bromomethane	ND		ug/kg	2.0	--	1
Vinyl chloride	ND		ug/kg	1.0	--	1
Chloroethane	ND		ug/kg	2.0	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--	1



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.51	--	1
1,2-Dichlorobenzene	ND		ug/kg	2.0	--	1
1,3-Dichlorobenzene	ND		ug/kg	2.0	--	1
1,4-Dichlorobenzene	ND		ug/kg	2.0	--	1
Methyl tert butyl ether	ND		ug/kg	2.0	--	1
p/m-Xylene	ND		ug/kg	2.0	--	1
o-Xylene	ND		ug/kg	1.0	--	1
Xylenes, Total	ND		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--	1
Dibromomethane	ND		ug/kg	2.0	--	1
1,4-Dichlorobutane	ND		ug/kg	10	--	1
1,2,3-Trichloropropane	ND		ug/kg	2.0	--	1
Styrene	ND		ug/kg	1.0	--	1
Dichlorodifluoromethane	ND		ug/kg	10	--	1
Acetone	78		ug/kg	26	--	1
Carbon disulfide	ND		ug/kg	10	--	1
2-Butanone	16		ug/kg	10	--	1
Vinyl acetate	ND		ug/kg	10	--	1
4-Methyl-2-pentanone	ND		ug/kg	10	--	1
2-Hexanone	ND		ug/kg	10	--	1
Ethyl methacrylate	ND		ug/kg	10	--	1
Acrylonitrile	ND		ug/kg	4.1	--	1
Bromochloromethane	ND		ug/kg	2.0	--	1
Tetrahydrofuran	ND		ug/kg	4.1	--	1
2,2-Dichloropropane	ND		ug/kg	2.0	--	1
1,2-Dibromoethane	ND		ug/kg	1.0	--	1
1,3-Dichloropropane	ND		ug/kg	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.51	--	1
Bromobenzene	ND		ug/kg	2.0	--	1
n-Butylbenzene	ND		ug/kg	1.0	--	1
sec-Butylbenzene	ND		ug/kg	1.0	--	1
tert-Butylbenzene	ND		ug/kg	2.0	--	1
o-Chlorotoluene	ND		ug/kg	2.0	--	1
p-Chlorotoluene	ND		ug/kg	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.1	--	1
Hexachlorobutadiene	ND		ug/kg	4.1	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.0	--	1
p-Isopropyltoluene	ND		ug/kg	1.0	--	1
Naphthalene	ND		ug/kg	4.1	--	1
n-Propylbenzene	ND		ug/kg	1.0	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.1	--	1
Ethyl ether	ND		ug/kg	2.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	<b>132</b>	Q	70-130
Dibromofluoromethane	102		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04 R  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 02:22  
 Analyst: MV  
 Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	5.8	--	1
1,1-Dichloroethane	ND		ug/kg	1.2	--	1
Chloroform	ND		ug/kg	1.8	--	1
Carbon tetrachloride	ND		ug/kg	1.2	--	1
1,2-Dichloropropane	ND		ug/kg	1.2	--	1
Dibromochloromethane	ND		ug/kg	1.2	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.2	--	1
Tetrachloroethene	ND		ug/kg	0.58	--	1
Chlorobenzene	ND		ug/kg	0.58	--	1
Trichlorofluoromethane	ND		ug/kg	4.7	--	1
1,2-Dichloroethane	ND		ug/kg	1.2	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.58	--	1
Bromodichloromethane	ND		ug/kg	0.58	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.58	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.58	--	1
1,1-Dichloropropene	ND		ug/kg	0.58	--	1
Bromoform	ND		ug/kg	4.7	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.58	--	1
Benzene	ND		ug/kg	0.58	--	1
Toluene	ND		ug/kg	1.2	--	1
Ethylbenzene	ND		ug/kg	1.2	--	1
Chloromethane	ND		ug/kg	4.7	--	1
Bromomethane	ND		ug/kg	2.3	--	1
Vinyl chloride	ND		ug/kg	1.2	--	1
Chloroethane	ND		ug/kg	2.3	--	1
1,1-Dichloroethene	ND		ug/kg	1.2	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.8	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04 R  
 Client ID: 2101333-SD109(0-4)  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.58	--	1
1,2-Dichlorobenzene	ND		ug/kg	2.3	--	1
1,3-Dichlorobenzene	ND		ug/kg	2.3	--	1
1,4-Dichlorobenzene	ND		ug/kg	2.3	--	1
Methyl tert butyl ether	ND		ug/kg	2.3	--	1
p/m-Xylene	ND		ug/kg	2.3	--	1
o-Xylene	ND		ug/kg	1.2	--	1
Xylenes, Total	ND		ug/kg	1.2	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.2	--	1
Dibromomethane	ND		ug/kg	2.3	--	1
1,4-Dichlorobutane	ND		ug/kg	12	--	1
1,2,3-Trichloropropane	ND		ug/kg	2.3	--	1
Styrene	ND		ug/kg	1.2	--	1
Dichlorodifluoromethane	ND		ug/kg	12	--	1
Acetone	81		ug/kg	29	--	1
Carbon disulfide	ND		ug/kg	12	--	1
2-Butanone	13		ug/kg	12	--	1
Vinyl acetate	ND		ug/kg	12	--	1
4-Methyl-2-pentanone	ND		ug/kg	12	--	1
2-Hexanone	ND		ug/kg	12	--	1
Ethyl methacrylate	ND		ug/kg	12	--	1
Acrylonitrile	ND		ug/kg	4.7	--	1
Bromochloromethane	ND		ug/kg	2.3	--	1
Tetrahydrofuran	ND		ug/kg	4.7	--	1
2,2-Dichloropropane	ND		ug/kg	2.3	--	1
1,2-Dibromoethane	ND		ug/kg	1.2	--	1
1,3-Dichloropropane	ND		ug/kg	2.3	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.58	--	1
Bromobenzene	ND		ug/kg	2.3	--	1
n-Butylbenzene	ND		ug/kg	1.2	--	1
sec-Butylbenzene	ND		ug/kg	1.2	--	1
tert-Butylbenzene	ND		ug/kg	2.3	--	1
o-Chlorotoluene	ND		ug/kg	2.3	--	1
p-Chlorotoluene	ND		ug/kg	2.3	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.5	--	1
Hexachlorobutadiene	ND		ug/kg	4.7	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04 R  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.2	--	1
p-Isopropyltoluene	ND		ug/kg	1.2	--	1
Naphthalene	ND		ug/kg	4.7	--	1
n-Propylbenzene	ND		ug/kg	1.2	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.3	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.3	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.3	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.3	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.8	--	1
Ethyl ether	ND		ug/kg	2.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	116		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 02:48  
 Analyst: MV  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	2.5	--	1
1,1-Dichloroethane	ND		ug/kg	0.50	--	1
Chloroform	ND		ug/kg	0.75	--	1
Carbon tetrachloride	ND		ug/kg	0.50	--	1
1,2-Dichloropropane	ND		ug/kg	0.50	--	1
Dibromochloromethane	ND		ug/kg	0.50	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.50	--	1
Tetrachloroethene	ND		ug/kg	0.25	--	1
Chlorobenzene	ND		ug/kg	0.25	--	1
Trichlorofluoromethane	ND		ug/kg	2.0	--	1
1,2-Dichloroethane	ND		ug/kg	0.50	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.25	--	1
Bromodichloromethane	ND		ug/kg	0.25	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.25	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.25	--	1
1,1-Dichloropropene	ND		ug/kg	0.25	--	1
Bromoform	ND		ug/kg	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.25	--	1
Benzene	ND		ug/kg	0.25	--	1
Toluene	ND		ug/kg	0.50	--	1
Ethylbenzene	ND		ug/kg	0.50	--	1
Chloromethane	ND		ug/kg	2.0	--	1
Bromomethane	ND		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	0.50	--	1
Chloroethane	ND		ug/kg	1.0	--	1
1,1-Dichloroethene	ND		ug/kg	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/kg	0.75	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165441

Project Number: 2101333

Report Date: 12/20/21

## SAMPLE RESULTS

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.25	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.0	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.0	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.0	--	1
Methyl tert butyl ether	ND		ug/kg	1.0	--	1
p/m-Xylene	ND		ug/kg	1.0	--	1
o-Xylene	ND		ug/kg	0.50	--	1
Xylenes, Total	ND		ug/kg	0.50	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.50	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.50	--	1
Dibromomethane	ND		ug/kg	1.0	--	1
1,4-Dichlorobutane	ND		ug/kg	5.0	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.0	--	1
Styrene	ND		ug/kg	0.50	--	1
Dichlorodifluoromethane	ND		ug/kg	5.0	--	1
Acetone	21		ug/kg	12	--	1
Carbon disulfide	ND		ug/kg	5.0	--	1
2-Butanone	ND		ug/kg	5.0	--	1
Vinyl acetate	ND		ug/kg	5.0	--	1
4-Methyl-2-pentanone	ND		ug/kg	5.0	--	1
2-Hexanone	ND		ug/kg	5.0	--	1
Ethyl methacrylate	ND		ug/kg	5.0	--	1
Acrylonitrile	ND		ug/kg	2.0	--	1
Bromochloromethane	ND		ug/kg	1.0	--	1
Tetrahydrofuran	ND		ug/kg	2.0	--	1
2,2-Dichloropropane	ND		ug/kg	1.0	--	1
1,2-Dibromoethane	ND		ug/kg	0.50	--	1
1,3-Dichloropropane	ND		ug/kg	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.25	--	1
Bromobenzene	ND		ug/kg	1.0	--	1
n-Butylbenzene	ND		ug/kg	0.50	--	1
sec-Butylbenzene	ND		ug/kg	0.50	--	1
tert-Butylbenzene	ND		ug/kg	1.0	--	1
o-Chlorotoluene	ND		ug/kg	1.0	--	1
p-Chlorotoluene	ND		ug/kg	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.5	--	1
Hexachlorobutadiene	ND		ug/kg	2.0	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165441

Project Number: 2101333

Report Date: 12/20/21

## SAMPLE RESULTS

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	0.50	--	1
p-Isopropyltoluene	ND		ug/kg	0.50	--	1
Naphthalene	ND		ug/kg	2.0	--	1
n-Propylbenzene	ND		ug/kg	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	2.5	--	1
Ethyl ether	ND		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	111		70-130



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 05:37  
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1581419-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
2-Chloroethylvinyl ether	ND		ug/kg	20	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 05:37  
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1581419-5					
Trichloroethene	ND		ug/kg	0.50	--
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,4-Dichlorobutane	ND		ug/kg	10	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
2-Butanone	ND		ug/kg	10	--
Vinyl acetate	ND		ug/kg	10	--
4-Methyl-2-pentanone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Ethyl methacrylate	ND		ug/kg	10	--
Acrolein	ND		ug/kg	25	--
Acrylonitrile	ND		ug/kg	4.0	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 05:37  
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1581419-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
1,3,5-Trichlorobenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	--
Ethyl ether	ND		ug/kg	2.0	--
Methyl Acetate	ND		ug/kg	4.0	--
Ethyl Acetate	ND		ug/kg	10	--
Isopropyl Ether	ND		ug/kg	2.0	--
Cyclohexane	ND		ug/kg	10	--
Tert-Butyl Alcohol	ND		ug/kg	20	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	--
1,4-Dioxane	ND		ug/kg	80	--
Methyl cyclohexane	ND		ug/kg	4.0	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 05:37  
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1581419-5					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	4.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 18:33  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,04-05 Batch: WG1581700-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	0.50	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 18:33  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,04-05 Batch: WG1581700-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,4-Dichlorobutane	ND		ug/kg	10	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
2-Butanone	ND		ug/kg	10	--
Vinyl acetate	ND		ug/kg	10	--
4-Methyl-2-pentanone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Ethyl methacrylate	ND		ug/kg	10	--
Acrylonitrile	ND		ug/kg	4.0	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
Analytical Date: 12/09/21 18:33  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,04-05 Batch: WG1581700-5					
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	--
Ethyl ether	ND		ug/kg	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	87		70-130

### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCS D		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1581419-3 WG1581419-4								
Methylene chloride	96		93		70-130		3	30
1,1-Dichloroethane	100		97		70-130		3	30
Chloroform	94		92		70-130		2	30
Carbon tetrachloride	97		96		70-130		1	30
1,2-Dichloropropane	96		95		70-130		1	30
Dibromochloromethane	98		99		70-130		1	30
1,1,2-Trichloroethane	98		99		70-130		1	30
2-Chloroethylvinyl ether	92		92		70-130		0	30
Tetrachloroethene	103		96		70-130		7	30
Chlorobenzene	100		97		70-130		3	30
Trichlorofluoromethane	94		91		70-139		3	30
1,2-Dichloroethane	89		92		70-130		3	30
1,1,1-Trichloroethane	101		98		70-130		3	30
Bromodichloromethane	92		93		70-130		1	30
trans-1,3-Dichloropropene	100		98		70-130		2	30
cis-1,3-Dichloropropene	97		96		70-130		1	30
1,1-Dichloropropene	104		100		70-130		4	30
Bromoform	91		93		70-130		2	30
1,1,2,2-Tetrachloroethane	97		97		70-130		0	30
Benzene	99		97		70-130		2	30
Toluene	99		95		70-130		4	30
Ethylbenzene	102		97		70-130		5	30
Chloromethane	98		90		52-130		9	30





## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCS D		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01_03-04 Batch: WG1581419-3 WG1581419-4								
Bromomethane	102		98		57-147		4	30
Vinyl chloride	106		100		67-130		6	30
Chloroethane	86		85		50-151		1	30
1,1-Dichloroethene	87		82		65-135		6	30
trans-1,2-Dichloroethene	100		95		70-130		5	30
Trichloroethene	100		95		70-130		5	30
1,2-Dichlorobenzene	98		94		70-130		4	30
1,3-Dichlorobenzene	100		96		70-130		4	30
1,4-Dichlorobenzene	100		96		70-130		4	30
Methyl tert butyl ether	95		95		66-130		0	30
p/m-Xylene	105		100		70-130		5	30
o-Xylene	104		99		70-130		5	30
cis-1,2-Dichloroethene	99		97		70-130		2	30
Dibromomethane	91		93		70-130		2	30
1,4-Dichlorobutane	93		93		70-130		0	30
1,2,3-Trichloropropane	95		97		68-130		2	30
Styrene	100		97		70-130		3	30
Dichlorodifluoromethane	104		96		30-146		8	30
Acetone	92		90		54-140		2	30
Carbon disulfide	86		84		59-130		2	30
2-Butanone	89		96		70-130		8	30
Vinyl acetate	110		112		70-130		2	30
4-Methyl-2-pentanone	95		95		70-130		0	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCS D		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1581419-3 WG1581419-4								
2-Hexanone	88		87		70-130		1	30
Ethyl methacrylate	92		92		70-130		0	30
Acrolein	84		91		70-130		8	30
Acrylonitrile	98		98		70-130		0	30
Bromochloromethane	90		88		70-130		2	30
Tetrahydrofuran	96		96		66-130		0	30
2,2-Dichloropropane	100		95		70-130		5	30
1,2-Dibromoethane	101		101		70-130		0	30
1,3-Dichloropropane	100		98		69-130		2	30
1,1,1,2-Tetrachloroethane	91		89		70-130		2	30
Bromobenzene	95		91		70-130		4	30
n-Butylbenzene	111		105		70-130		6	30
sec-Butylbenzene	109		102		70-130		7	30
tert-Butylbenzene	105		99		70-130		6	30
1,3,5-Trichlorobenzene	104		99		70-139		5	30
o-Chlorotoluene	103		97		70-130		6	30
p-Chlorotoluene	102		100		70-130		2	30
1,2-Dibromo-3-chloropropane	91		93		68-130		2	30
Hexachlorobutadiene	102		98		67-130		4	30
Isopropylbenzene	107		101		70-130		6	30
p-Isopropyltoluene	108		103		70-130		5	30
Naphthalene	93		91		70-130		2	30
n-Propylbenzene	109		103		70-130		6	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1581419-3 WG1581419-4								
1,2,3-Trichlorobenzene	95		91		70-130		4	30
1,2,4-Trichlorobenzene	101		96		70-130		5	30
1,3,5-Trimethylbenzene	105		99		70-130		6	30
1,2,4-Trimethylbenzene	103		97		70-130		6	30
trans-1,4-Dichloro-2-butene	99		98		70-130		1	30
Ethyl ether	90		91		67-130		1	30
Methyl Acetate	96		96		65-130		0	30
Ethyl Acetate	93		93		70-130		0	30
Isopropyl Ether	103		100		66-130		3	30
Cyclohexane	108		102		70-130		6	30
Tert-Butyl Alcohol	88		87		70-130		1	30
Ethyl-Tert-Butyl-Ether	97		96		70-130		1	30
Tertiary-Amyl Methyl Ether	93		93		70-130		0	30
1,4-Dioxane	88		88		65-136		0	30
Methyl cyclohexane	109		104		70-130		5	30
1,1,2-Trichloro-1,2,2-Trifluoroethane	101		96		70-130		5	30

Surrogate	LCS		LCSD		Acceptance Criteria	
	%Recovery	Qual	%Recovery	Qual	Criteria	Criteria
1,2-Dichloroethane-d4	94		96		70-130	70-130
Toluene-d8	102		102		70-130	70-130
4-Bromofluorobenzene	100		98		70-130	70-130
Dibromofluoromethane	97		98		70-130	70-130



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,04-05 Batch: WG1581700-3 WG1581700-4								
Methylene chloride	87		88		70-130		1	30
1,1-Dichloroethane	92		92		70-130		0	30
Chloroform	100		96		70-130		4	30
Carbon tetrachloride	103		96		70-130		7	30
1,2-Dichloropropane	89		90		70-130		1	30
Dibromochloromethane	86		86		70-130		0	30
1,1,2-Trichloroethane	100		101		70-130		1	30
Tetrachloroethene	104		99		70-130		5	30
Chlorobenzene	98		94		70-130		4	30
Trichlorofluoromethane	134		96		70-139		33	30
1,2-Dichloroethane	93		92		70-130		1	30
1,1,1-Trichloroethane	105		98		70-130		7	30
Bromodichloromethane	105		100		70-130		5	30
trans-1,3-Dichloropropene	96		96		70-130		0	30
cis-1,3-Dichloropropene	124		93		70-130		29	30
1,1-Dichloropropene	105		102		70-130		3	30
Bromoform	87		88		70-130		1	30
1,1,2,2-Tetrachloroethane	96		97		70-130		1	30
Benzene	98		97		70-130		1	30
Toluene	103		97		70-130		6	30
Ethylbenzene	106		102		70-130		4	30
Chloromethane	87		61		52-130		35	30
Bromomethane	139		95		57-147		38	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCS D		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,04-05 Batch: WG1581700-3 WG1581700-4								
Vinyl chloride	104		75		67-130	Q	32	30
Chloroethane	162	Q	116		50-151	Q	33	30
1,1-Dichloroethene	94		82		65-135		14	30
trans-1,2-Dichloroethene	92		92		70-130		0	30
Trichloroethene	99		95		70-130		4	30
1,2-Dichlorobenzene	94		92		70-130		2	30
1,3-Dichlorobenzene	97		94		70-130		3	30
1,4-Dichlorobenzene	95		91		70-130		4	30
Methyl tert butyl ether	91		97		66-130		6	30
p/m-Xylene	107		103		70-130		4	30
o-Xylene	104		102		70-130		2	30
cis-1,2-Dichloroethene	92		91		70-130		1	30
Dibromomethane	93		90		70-130		3	30
1,4-Dichlorobutane	85		85		70-130		0	30
1,2,3-Trichloropropane	97		97		68-130		0	30
Styrene	109		107		70-130		2	30
Dichlorodifluoromethane	117		79		30-146	Q	39	30
Acetone	73		84		54-140		14	30
Carbon disulfide	92		84		59-130		9	30
2-Butanone	65	Q	69		70-130	Q	6	30
Vinyl acetate	76		82		70-130		8	30
4-Methyl-2-pentanone	64	Q	70		70-130		9	30
2-Hexanone	62	Q	68		70-130	Q	9	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCS D		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,04-05 Batch: WG1581700-3 WG1581700-4								
Ethyl methacrylate	83		88		70-130		6	30
Acrylonitrile	69	Q	79		70-130		14	30
Bromochloromethane	87		85		70-130		2	30
Tetrahydrofuran	60	Q	72		66-130		18	30
2,2-Dichloropropane	108		102		70-130		6	30
1,2-Dibromoethane	86		87		70-130		1	30
1,3-Dichloropropane	100		101		69-130		1	30
1,1,1,2-Tetrachloroethane	100		100		70-130		0	30
Bromobenzene	93		91		70-130		2	30
n-Butylbenzene	114		108		70-130		5	30
sec-Butylbenzene	107		101		70-130		6	30
tert-Butylbenzene	100		96		70-130		4	30
o-Chlorotoluene	105		99		70-130		6	30
p-Chlorotoluene	103		99		70-130		4	30
1,2-Dibromo-3-chloropropane	70		72		68-130		3	30
Hexachlorobutadiene	109		102		67-130		7	30
Isopropylbenzene	103		99		70-130		4	30
p-Isopropyltoluene	105		99		70-130		6	30
Naphthalene	83		86		70-130		4	30
n-Propylbenzene	109		104		70-130		5	30
1,2,3-Trichlorobenzene	95		95		70-130		0	30
1,2,4-Trichlorobenzene	99		97		70-130		2	30
1,3,5-Trimethylbenzene	105		100		70-130		5	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,04-05 Batch: WG1581700-3 WG1581700-4								
1,2,4-Trimethylbenzene	104		100		70-130		4	30
trans-1,4-Dichloro-2-butene	95		98		70-130		3	30
Ethyl ether	124		94		67-130		28	30

Surrogate	LCS		LCSD		Acceptance	
	%Recovery	Qual	%Recovery	Qual	Criteria	Criteria
1,2-Dichloroethane-d4	103		102		70-130	70-130
Toluene-d8	105		105		70-130	70-130
4-Bromofluorobenzene	98		100		70-130	70-130
Dibromofluoromethane	98		97		70-130	70-130



# SEMIVOLATILES



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 19:37  
 Analyst: WR  
 Percent Solids: 48%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	86		ug/kg	14	--	1
2-Chloronaphthalene	ND		ug/kg	14	--	1
Fluoranthene	2700	E	ug/kg	14	--	1
Naphthalene	390		ug/kg	14	--	1
Benzo(a)anthracene	1600	E	ug/kg	14	--	1
Benzo(a)pyrene	1200		ug/kg	14	--	1
Benzo(b)fluoranthene	1900	E	ug/kg	14	--	1
Benzo(k)fluoranthene	580		ug/kg	14	--	1
Chrysene	1300		ug/kg	14	--	1
Acenaphthylene	360		ug/kg	14	--	1
Anthracene	470		ug/kg	14	--	1
Benzo(ghi)perylene	920		ug/kg	14	--	1
Fluorene	290		ug/kg	14	--	1
Phenanthrene	1200		ug/kg	14	--	1
Dibenzo(a,h)anthracene	250		ug/kg	14	--	1
Indeno(1,2,3-cd)pyrene	1200		ug/kg	14	--	1
Pyrene	2300	E	ug/kg	14	--	1
1-Methylnaphthalene	54		ug/kg	14	--	1
2-Methylnaphthalene	120		ug/kg	14	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-01 D

Date Collected: 11/29/21 15:50

Client ID: 2101333-SD101(0-3')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: EPA 3546

Analytical Method: 1,8270D-SIM

Extraction Date: 12/10/21 04:07

Analytical Date: 12/14/21 17:37

Analyst: DV

Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs by GC/MS-SIM - Westborough Lab						
Fluoranthene	2100		ug/kg	69	--	5
Benzo(a)anthracene	1200		ug/kg	69	--	5
Benzo(b)fluoranthene	1300		ug/kg	69	--	5
Pyrene	1800		ug/kg	69	--	5

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 19:53  
 Analyst: WR  
 Percent Solids: 43%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	15	--	1
2-Chloronaphthalene	ND		ug/kg	15	--	1
Fluoranthene	310		ug/kg	15	--	1
Naphthalene	ND		ug/kg	15	--	1
Benzo(a)anthracene	270		ug/kg	15	--	1
Benzo(a)pyrene	200		ug/kg	15	--	1
Benzo(b)fluoranthene	270		ug/kg	15	--	1
Benzo(k)fluoranthene	87		ug/kg	15	--	1
Chrysene	170		ug/kg	15	--	1
Acenaphthylene	90		ug/kg	15	--	1
Anthracene	71		ug/kg	15	--	1
Benzo(ghi)perylene	150		ug/kg	15	--	1
Fluorene	24		ug/kg	15	--	1
Phenanthrene	130		ug/kg	15	--	1
Dibenzo(a,h)anthracene	39		ug/kg	15	--	1
Indeno(1,2,3-cd)pyrene	180		ug/kg	15	--	1
Pyrene	280		ug/kg	15	--	1
1-Methylnaphthalene	ND		ug/kg	15	--	1
2-Methylnaphthalene	ND		ug/kg	15	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 20:10  
 Analyst: WR  
 Percent Solids: 36%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	18	--	1
2-Chloronaphthalene	ND		ug/kg	18	--	1
Fluoranthene	550		ug/kg	18	--	1
Naphthalene	19		ug/kg	18	--	1
Benzo(a)anthracene	430		ug/kg	18	--	1
Benzo(a)pyrene	310		ug/kg	18	--	1
Benzo(b)fluoranthene	410		ug/kg	18	--	1
Benzo(k)fluoranthene	120		ug/kg	18	--	1
Chrysene	250		ug/kg	18	--	1
Acenaphthylene	82		ug/kg	18	--	1
Anthracene	67		ug/kg	18	--	1
Benzo(ghi)perylene	220		ug/kg	18	--	1
Fluorene	33		ug/kg	18	--	1
Phenanthrene	210		ug/kg	18	--	1
Dibenzo(a,h)anthracene	56		ug/kg	18	--	1
Indeno(1,2,3-cd)pyrene	270		ug/kg	18	--	1
Pyrene	490		ug/kg	18	--	1
1-Methylnaphthalene	ND		ug/kg	18	--	1
2-Methylnaphthalene	ND		ug/kg	18	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	52		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 20:26  
 Analyst: WR  
 Percent Solids: 45%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	15	--	1
2-Chloronaphthalene	ND		ug/kg	15	--	1
Fluoranthene	60		ug/kg	15	--	1
Naphthalene	ND		ug/kg	15	--	1
Benzo(a)anthracene	62		ug/kg	15	--	1
Benzo(a)pyrene	38		ug/kg	15	--	1
Benzo(b)fluoranthene	54		ug/kg	15	--	1
Benzo(k)fluoranthene	16		ug/kg	15	--	1
Chrysene	34		ug/kg	15	--	1
Acenaphthylene	23		ug/kg	15	--	1
Anthracene	ND		ug/kg	15	--	1
Benzo(ghi)perylene	27		ug/kg	15	--	1
Fluorene	ND		ug/kg	15	--	1
Phenanthrene	26		ug/kg	15	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	15	--	1
Indeno(1,2,3-cd)pyrene	34		ug/kg	15	--	1
Pyrene	57		ug/kg	15	--	1
1-Methylnaphthalene	ND		ug/kg	15	--	1
2-Methylnaphthalene	ND		ug/kg	15	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 20:42  
 Analyst: WR  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.4	--	1
2-Chloronaphthalene	ND		ug/kg	8.4	--	1
Fluoranthene	130		ug/kg	8.4	--	1
Naphthalene	11		ug/kg	8.4	--	1
Benzo(a)anthracene	120		ug/kg	8.4	--	1
Benzo(a)pyrene	81		ug/kg	8.4	--	1
Benzo(b)fluoranthene	120		ug/kg	8.4	--	1
Benzo(k)fluoranthene	35		ug/kg	8.4	--	1
Chrysene	72		ug/kg	8.4	--	1
Acenaphthylene	39		ug/kg	8.4	--	1
Anthracene	37		ug/kg	8.4	--	1
Benzo(ghi)perylene	59		ug/kg	8.4	--	1
Fluorene	13		ug/kg	8.4	--	1
Phenanthrene	71		ug/kg	8.4	--	1
Dibenzo(a,h)anthracene	16		ug/kg	8.4	--	1
Indeno(1,2,3-cd)pyrene	76		ug/kg	8.4	--	1
Pyrene	120		ug/kg	8.4	--	1
1-Methylnaphthalene	ND		ug/kg	8.4	--	1
2-Methylnaphthalene	ND		ug/kg	8.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 12/10/21 19:20  
Analyst: WR

Extraction Method: EPA 3546  
Extraction Date: 12/10/21 04:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-05 Batch: WG1581479-1					
Acenaphthene	ND		ug/kg	6.5	--
2-Chloronaphthalene	ND		ug/kg	6.5	--
Fluoranthene	ND		ug/kg	6.5	--
Naphthalene	ND		ug/kg	6.5	--
Benzo(a)anthracene	ND		ug/kg	6.5	--
Benzo(a)pyrene	ND		ug/kg	6.5	--
Benzo(b)fluoranthene	ND		ug/kg	6.5	--
Benzo(k)fluoranthene	ND		ug/kg	6.5	--
Chrysene	ND		ug/kg	6.5	--
Acenaphthylene	ND		ug/kg	6.5	--
Anthracene	ND		ug/kg	6.5	--
Benzo(ghi)perylene	ND		ug/kg	6.5	--
Fluorene	ND		ug/kg	6.5	--
Phenanthrene	ND		ug/kg	6.5	--
Dibenzo(a,h)anthracene	ND		ug/kg	6.5	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.5	--
Pyrene	ND		ug/kg	6.5	--
1-Methylnaphthalene	ND		ug/kg	6.5	--
2-Methylnaphthalene	ND		ug/kg	6.5	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-05 Batch: WG1581479-2 WG1581479-3								
Acenaphthene	84		93		40-140		10	50
2-Chloronaphthalene	84		93		40-140		10	50
Fluoranthene	93		102		40-140		9	50
Naphthalene	82		91		40-140		10	50
Benzo(a)anthracene	103		115		40-140		11	50
Benzo(a)pyrene	101		112		40-140		10	50
Benzo(b)fluoranthene	94		105		40-140		11	50
Benzo(k)fluoranthene	94		104		40-140		10	50
Chrysene	81		90		40-140		11	50
Acenaphthylene	90		100		40-140		11	50
Anthracene	90		101		40-140		12	50
Benzo(ghi)perylene	97		108		40-140		11	50
Fluorene	88		97		40-140		10	50
Phenanthrene	84		93		40-140		10	50
Dibenzo(a,h)anthracene	109		121		40-140		10	50
Indeno(1,2,3-cd)pyrene	109		119		40-140		9	50
Pyrene	94		103		35-142		9	50
1-Methylnaphthalene	86		95		40-140		10	50
2-Methylnaphthalene	83		92		40-140		10	50





## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-05 Batch: WG1581479-2 WG1581479-3								

Surrogate	LCS		LCSD		Acceptance	
	%Recovery	Qual	%Recovery	Qual	Criteria	
Nitrobenzene-d5	90		100		23-120	
2-Fluorobiphenyl	80		88		30-120	
4-Terphenyl-d14	86		95		18-120	



# PETROLEUM HYDROCARBONS

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 11:57  
 Analyst: JB  
 Percent Solids: 48%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	170000		ug/kg	66600	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			68		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 13:12  
 Analyst: JB  
 Percent Solids: 43%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	77000	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			77		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 13:37  
 Analyst: JB  
 Percent Solids: 36%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	89400	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			82		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 14:02  
 Analyst: JB  
 Percent Solids: 45%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	71400	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			80		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 14:26  
 Analyst: JB  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	42200	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			87		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8015D(M)  
Analytical Date: 12/12/21 12:22  
Analyst: JB

Extraction Method: EPA 3546  
Extraction Date: 12/10/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 01-05 Batch: WG1581675-1					
TPH (C10-C36)	ND		ug/kg	33100	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	76		40-140



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS %Recovery	Qual	LCS D %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-05 Batch: WG1581675-2								
TPH (C10-C36)	85		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCS D %Recovery	Qual	Acceptance Criteria
o-Terphenyl	78				40-140



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2165441

**Project Number:** 2101333

**Report Date:** 12/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG1581675-3 QC Sample: L2165441-01 Client ID: 2101333-SD101(0-3')						
TPH (C10-C36)	170000	111000	ug/kg	42	Q	40

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	68		66		40-140



# PCBS

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-01  
 Client ID: 2101333-SD101(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/17/21 08:41  
 Analyst: JWL  
 Percent Solids: 48%

Extraction Method: EPA 3540C  
 Extraction Date: 12/16/21 12:11  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/17/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	41.3	--	1	A
Aroclor 1221	ND		ug/kg	41.3	--	1	A
Aroclor 1232	ND		ug/kg	41.3	--	1	A
Aroclor 1242	ND		ug/kg	41.3	--	1	A
Aroclor 1248	ND		ug/kg	27.5	--	1	A
Aroclor 1254	ND		ug/kg	41.3	--	1	A
Aroclor 1260	ND		ug/kg	27.5	--	1	A
Aroclor 1262	ND		ug/kg	13.8	--	1	A
Aroclor 1268	ND		ug/kg	13.8	--	1	A
PCBs, Total	ND		ug/kg	13.8	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	69		30-150	B
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	69		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/17/21 08:50  
 Analyst: JWL  
 Percent Solids: 43%

Extraction Method: EPA 3540C  
 Extraction Date: 12/16/21 12:11  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/17/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	46.0	--	1	A
Aroclor 1221	ND		ug/kg	46.0	--	1	A
Aroclor 1232	ND		ug/kg	46.0	--	1	A
Aroclor 1242	ND		ug/kg	46.0	--	1	A
Aroclor 1248	ND		ug/kg	30.6	--	1	A
Aroclor 1254	ND		ug/kg	46.0	--	1	A
Aroclor 1260	ND		ug/kg	30.6	--	1	A
Aroclor 1262	ND		ug/kg	15.3	--	1	A
Aroclor 1268	ND		ug/kg	15.3	--	1	A
PCBs, Total	ND		ug/kg	15.3	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	72		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	72		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-03  
 Client ID: 2101333-SD106(0-4.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 14:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/17/21 09:00  
 Analyst: JWL  
 Percent Solids: 36%

Extraction Method: EPA 3540C  
 Extraction Date: 12/16/21 12:11  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/17/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	53.4	--	1	A
Aroclor 1221	ND		ug/kg	53.4	--	1	A
Aroclor 1232	ND		ug/kg	53.4	--	1	A
Aroclor 1242	ND		ug/kg	53.4	--	1	A
Aroclor 1248	ND		ug/kg	35.6	--	1	A
Aroclor 1254	ND		ug/kg	53.4	--	1	A
Aroclor 1260	ND		ug/kg	35.6	--	1	A
Aroclor 1262	ND		ug/kg	17.8	--	1	A
Aroclor 1268	ND		ug/kg	17.8	--	1	A
PCBs, Total	ND		ug/kg	17.8	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	64		30-150	B
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	66		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-04  
 Client ID: 2101333-SD109(0-4')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 12:55  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/17/21 09:09  
 Analyst: JWL  
 Percent Solids: 45%

Extraction Method: EPA 3540C  
 Extraction Date: 12/16/21 12:11  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/17/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	41.9	--	1	A
Aroclor 1221	ND		ug/kg	41.9	--	1	A
Aroclor 1232	ND		ug/kg	41.9	--	1	A
Aroclor 1242	ND		ug/kg	41.9	--	1	A
Aroclor 1248	ND		ug/kg	27.9	--	1	A
Aroclor 1254	ND		ug/kg	41.9	--	1	A
Aroclor 1260	ND		ug/kg	27.9	--	1	A
Aroclor 1262	ND		ug/kg	14.0	--	1	A
Aroclor 1268	ND		ug/kg	14.0	--	1	A
PCBs, Total	ND		ug/kg	14.0	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	62		30-150	B
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	64		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-05  
 Client ID: 2101333-SD112(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 11:50  
 Date Received: 11/30/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/17/21 09:54  
 Analyst: JWL  
 Percent Solids: 79%

Extraction Method: EPA 3540C  
 Extraction Date: 12/16/21 02:20  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/17/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	25.4	--	1	A
Aroclor 1221	ND		ug/kg	25.4	--	1	A
Aroclor 1232	ND		ug/kg	25.4	--	1	A
Aroclor 1242	ND		ug/kg	25.4	--	1	A
Aroclor 1248	ND		ug/kg	16.9	--	1	A
Aroclor 1254	ND		ug/kg	25.4	--	1	A
Aroclor 1260	ND		ug/kg	16.9	--	1	A
Aroclor 1262	ND		ug/kg	8.46	--	1	A
Aroclor 1268	ND		ug/kg	8.46	--	1	A
PCBs, Total	ND		ug/kg	8.46	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	65		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	70		30-150	A



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8082A  
Analytical Date: 12/17/21 08:13  
Analyst: JWL

Extraction Method: EPA 3540C  
Extraction Date: 12/16/21 02:20  
Cleanup Method: EPA 3665A  
Cleanup Date: 12/17/21  
Cleanup Method: EPA 3660B  
Cleanup Date: 12/17/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-05 Batch: WG1583948-1						
Aroclor 1016	ND		ug/kg	19.2	--	A
Aroclor 1221	ND		ug/kg	19.2	--	A
Aroclor 1232	ND		ug/kg	19.2	--	A
Aroclor 1242	ND		ug/kg	19.2	--	A
Aroclor 1248	ND		ug/kg	12.8	--	A
Aroclor 1254	ND		ug/kg	19.2	--	A
Aroclor 1260	ND		ug/kg	12.8	--	A
Aroclor 1262	ND		ug/kg	6.41	--	A
Aroclor 1268	ND		ug/kg	6.41	--	A
PCBs, Total	ND		ug/kg	6.41	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	72		30-150	B
2,4,5,6-Tetrachloro-m-xylene	80		30-150	A
Decachlorobiphenyl	79		30-150	A

### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-05 Batch: WG1583948-2 WG1583948-3									
Aroclor 1016	66		60		40-140	10		50	A
Aroclor 1260	61		58		40-140	5		50	A

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		68		30-150	B
Decachlorobiphenyl	67		64		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		67		30-150	A
Decachlorobiphenyl	69		65		30-150	A



## METALS

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-01

Date Collected: 11/29/21 15:50

Client ID: 2101333-SD101(0-3')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 48%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	42.4		mg/kg	0.819	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Barium, Total	95.6		mg/kg	0.819	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Cadmium, Total	ND		mg/kg	0.819	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Chromium, Total	51.3		mg/kg	0.819	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Lead, Total	307		mg/kg	4.09	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Mercury, Total	0.799		mg/kg	0.172	--	1	12/08/21 22:55	12/09/21 12:48	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.64	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC
Silver, Total	ND		mg/kg	0.819	--	1	12/08/21 21:56	12/10/21 21:55	EPA 3050B	1,6010D	MC



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-02

Date Collected: 11/29/21 15:00

Client ID: 2101333-SD104(0-3.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 43%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	43.0		mg/kg	0.899	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Barium, Total	112		mg/kg	0.899	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Cadmium, Total	ND		mg/kg	0.899	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Chromium, Total	53.7		mg/kg	0.899	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Lead, Total	304		mg/kg	4.50	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Mercury, Total	0.760		mg/kg	0.183	--	1	12/08/21 22:55	12/09/21 12:52	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.80	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC
Silver, Total	ND		mg/kg	0.899	--	1	12/08/21 21:56	12/10/21 22:00	EPA 3050B	1,6010D	MC



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-03

Date Collected: 11/29/21 14:00

Client ID: 2101333-SD106(0-4.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 36%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	45.3		mg/kg	1.08	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Barium, Total	126		mg/kg	1.08	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Cadmium, Total	ND		mg/kg	1.08	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Chromium, Total	59.6		mg/kg	1.08	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Lead, Total	210		mg/kg	5.38	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Mercury, Total	0.320		mg/kg	0.191	--	1	12/08/21 22:55	12/09/21 12:55	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	2.15	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC
Silver, Total	ND		mg/kg	1.08	--	1	12/08/21 21:56	12/10/21 22:05	EPA 3050B	1,6010D	MC



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-04

Date Collected: 11/29/21 12:55

Client ID: 2101333-SD109(0-4')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 45%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	27.8		mg/kg	0.857	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Barium, Total	107		mg/kg	0.857	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Cadmium, Total	ND		mg/kg	0.857	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Chromium, Total	47.7		mg/kg	0.857	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Lead, Total	107		mg/kg	4.29	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Mercury, Total	0.290		mg/kg	0.180	--	1	12/08/21 22:55	12/09/21 12:58	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.71	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC
Silver, Total	ND		mg/kg	0.857	--	1	12/08/21 21:56	12/10/21 22:10	EPA 3050B	1,6010D	MC



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165441**Project Number:** 2101333**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2165441-05

Date Collected: 11/29/21 11:50

Client ID: 2101333-SD112(0-3')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	9.03		mg/kg	0.492	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Barium, Total	26.3		mg/kg	0.492	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Cadmium, Total	ND		mg/kg	0.492	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Chromium, Total	16.9		mg/kg	0.492	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Lead, Total	17.0		mg/kg	2.46	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Mercury, Total	ND		mg/kg	0.099	--	1	12/08/21 22:55	12/09/21 13:02	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	0.983	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC
Silver, Total	ND		mg/kg	0.492	--	1	12/08/21 21:56	12/10/21 22:15	EPA 3050B	1,6010D	MC





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

### Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG1580756-1									
Arsenic, Total	ND	mg/kg	0.400	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Barium, Total	ND	mg/kg	0.400	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Cadmium, Total	ND	mg/kg	0.400	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Chromium, Total	ND	mg/kg	0.400	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Lead, Total	ND	mg/kg	2.00	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Selenium, Total	ND	mg/kg	0.800	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC
Silver, Total	ND	mg/kg	0.400	--	1	12/08/21 21:56	12/10/21 19:17	1,6010D	MC

#### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG1580757-1									
Mercury, Total	ND	mg/kg	0.083	--	1	12/08/21 22:55	12/09/21 10:51	1,7471B	AC

#### Prep Information

Digestion Method: EPA 7471B

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Qual			
<b>Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG1580756-2 SRM Lot Number: D109-540</b>									
Arsenic, Total	95	-	-	-	70-130	-	-	-	-
Barium, Total	82	-	-	-	75-125	-	-	-	-
Cadmium, Total	90	-	-	-	75-125	-	-	-	-
Chromium, Total	88	-	-	-	70-130	-	-	-	-
Lead, Total	93	-	-	-	72-128	-	-	-	-
Selenium, Total	89	-	-	-	68-132	-	-	-	-
Silver, Total	92	-	-	-	68-131	-	-	-	-
<b>Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG1580757-2 SRM Lot Number: D109-540</b>									
Mercury, Total	129	-	-	-	60-140	-	-	-	-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1580756-3 QC Sample: L2165217-01 Client ID: MS Sample										
Arsenic, Total	4.61	11.1	14.5	89	-	-	-	75-125	-	20
Barium, Total	60.8	184	203	77	-	-	-	75-125	-	20
Cadmium, Total	ND	4.88	4.26	87	-	-	-	75-125	-	20
Chromium, Total	12.0	18.4	27.3	83	-	-	-	75-125	-	20
Lead, Total	54.8	48.8	73.9	39	Q	-	-	75-125	-	20
Selenium, Total	ND	11.1	8.34	75	-	-	-	75-125	-	20
Silver, Total	ND	27.6	24.6	89	-	-	-	75-125	-	20

Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1580757-3 QC Sample: L2165217-01 Client ID: MS Sample										
Mercury, Total	ND	0.169	0.272	161	Q	-	-	80-120	-	20



## Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
<b>Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1580756-4 QC Sample: L2165217-01 Client ID: DUP Sample</b>						
Arsenic, Total	4.61	5.50	mg/kg	18		20
Barium, Total	60.8	57.8	mg/kg	5		20
Cadmium, Total	ND	ND	mg/kg	NC		20
Chromium, Total	12.0	14.8	mg/kg	21	Q	20
Lead, Total	54.8	24.9	mg/kg	75	Q	20
Selenium, Total	ND	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
<b>Total Metals - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1580757-4 QC Sample: L2165217-01 Client ID: DUP Sample</b>						
Mercury, Total	ND	ND	mg/kg	NC		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

**Lab ID:** L2165441-01  
**Client ID:** 2101333-SD101(0-3')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:50  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	47.9		%	0.100	NA	1	-	11/30/21 20:43	121,2540G	SB



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

Lab ID: L2165441-02  
 Client ID: 2101333-SD104(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/29/21 15:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	43.3		%	0.100	NA	1	-	11/30/21 20:43	121,2540G	SB



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

**Lab ID:** L2165441-03  
**Client ID:** 2101333-SD106(0-4.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 14:00  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	35.9		%	0.100	NA	1	-	11/30/21 20:43	121,2540G	SB





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

**Lab ID:** L2165441-04  
**Client ID:** 2101333-SD109(0-4')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 12:55  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	44.9		%	0.100	NA	1	-	11/30/21 20:43	121,2540G	SB



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

**SAMPLE RESULTS**

**Lab ID:** L2165441-05  
**Client ID:** 2101333-SD112(0-3')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 11:50  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.6		%	0.100	NA	1	-	11/30/21 20:43	121,2540G	SB



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2165441

**Project Number:** 2101333

**Report Date:** 12/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-05 QC Batch ID: WG1577394-1 QC Sample: L2165364-02 Client ID: DUP Sample						
Solids, Total	78.5	79.9	%	2		20



Serial\_No:12202115:51  
 Lab Number: L2165441  
 Report Date: 12/20/21

Project Name: NEWBURYPORT FROG POND  
 Project Number: 2101333

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**  
 Cooler Custody Seal  
 B Absent

Container Information		Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165441-01A	Vial MeOH preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-01B	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-01C	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-01D	Plastic 2oz unpreserved for TS	B	NA	2.6	2.6	Y	Absent		TS(7)
L2165441-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA	2.6	2.6	Y	Absent		AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L2165441-01F	Glass 500ml/16oz unpreserved	B	NA	2.6	2.6	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165441-02A	Vial MeOH preserved	B	NA	2.6	2.6	Y	Absent		8260HLW(14)
L2165441-02B	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-02C	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-02D	Plastic 2oz unpreserved for TS	B	NA	2.6	2.6	Y	Absent		TS(7)
L2165441-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA	2.6	2.6	Y	Absent		BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180)
L2165441-02F	Glass 500ml/16oz unpreserved	B	NA	2.6	2.6	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165441-03A	Vial MeOH preserved	B	NA	2.6	2.6	Y	Absent		8260HLW(14)
L2165441-03B	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-03C	Vial water preserved	B	NA	2.6	2.6	Y	Absent	30-NOV-21 17:30	8260HLW(14)
L2165441-03D	Plastic 2oz unpreserved for TS	B	NA	2.6	2.6	Y	Absent		TS(7)
L2165441-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA	2.6	2.6	Y	Absent		BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2165441-03F	Glass 500ml/16oz unpreserved	B	NA	2.6	2.6	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165441-04A	Vial MeOH preserved	B	NA	2.6	2.6	Y	Absent		8260HLW(14)

\*Values in parentheses indicate holding time in days



Serial\_No:12202115:51

Project Name: NEWBURYPORT FROG POND  
Project Number: 2101333

Lab Number: L2165441  
Report Date: 12/20/21

Container Information			Initial	Final	Temp	Frozen	Analysis(*)
Container ID	Container Type	Cooler	pH	pH	deg C	Date/Time	
L2165441-04B	Vial water preserved	B	NA	2.6		30-NOV-21 17:30	8260HLW(14)
L2165441-04C	Vial water preserved	B	NA	2.6		30-NOV-21 17:30	8260HLW(14)
L2165441-04D	Plastic 2oz unpreserved for TS	B	NA	2.6			TS(7)
L2165441-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA	2.6			BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2165441-04F	Glass 500ml/16oz unpreserved	B	NA	2.6			PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165441-05A	Vial MeOH preserved	B	NA	2.6			8260HLW(14)
L2165441-05B	Vial water preserved	B	NA	2.6		30-NOV-21 17:30	8260HLW(14)
L2165441-05C	Vial water preserved	B	NA	2.6		30-NOV-21 17:30	8260HLW(14)
L2165441-05D	Plastic 2oz unpreserved for TS	B	NA	2.6			TS(7)
L2165441-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA	2.6			AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180)
L2165441-05F	Glass 500ml/16oz unpreserved	B	NA	2.6			PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
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### Footnotes

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

### Terms

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

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

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

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

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

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

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

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

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

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
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#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165441  
**Report Date:** 12/20/21

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

# Chain-of-Custody Record

**Laboratory:** Alpha Analytical  
**Laboratory Job #** (Lab use only) LA165471  
**Project Name:** Newburyport Frog Pond  
**Project Location:** Newburyport, MA  
**Project Number:** 2101333  
**Project Manager:** Krista Wolfe  
**Send Report to:** Krista Wolfe  
 781-424-9909 kwolfe@geiconsultants.com  
 labdata@geiconsultants.com

**Laboratory Job #** LA165471  
**Page** 1 of 1

**MCP PRESUMPTIVE CERTAINTY AND ANALYTICAL METHODS REQUIRED:** YES  NO   
**STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS**  
 State/Federal Program: MA  NH  RI  CT  NY  ME  
 MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

**Sample Handling**  
 Samples Field Filtered: YES  NO  NA   
 Sampled Shipped With Ice: YES  NO

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	Analysis				Sample Specific Remarks								
		Date	Time				PAH, TPH, PCB, TCLP Metals if necessary	RCRA 8 Metals*	% Solids	VOC		MeOH & H2O	None						
45471-01	2101333-S2101(0-3)	11/29/21	2550	SD	26	(WS)	X	X	X	X									
02	2101333-S2101(0-3.5)	11/29/21	1500	SD	6	(WS)	X	X	X	X									
03	2101333-S2101(0-4.5)	11/29/21	1400	SD	6	(WS)	X	X	X	X									
04	2101333-S2101(0-4)	11/29/21	1255	SD	6	(WS)	X	X	X	X									
05	2101333-S2102(0-3)	11/29/21	1150	SD	6	(WS)	X	X	X	X									

Relinquished by sampler (signature)	Date	Time	Received by (signature)	Time	Turnaround Time (Business days):	Additional Requirements/Comments/Remarks:
<i>Krista Wolfe</i>	11-30-21	10:55	<i>John DAVOS</i>	11:30	5-Day <input checked="" type="checkbox"/> 4-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 1-Day <input type="checkbox"/> Other <input type="checkbox"/>	
<i>John DAVOS</i>	11-30-21	12:45	<i>[Signature]</i>	1:00		
<i>[Signature]</i>			<i>[Signature]</i>			
<i>[Signature]</i>			<i>[Signature]</i>			
<i>[Signature]</i>			<i>[Signature]</i>			



## ANALYTICAL REPORT

Lab Number:	L2165447
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/14/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165447-01	2101333-SD101(0-1')	SOIL	NEWBURYPORT, MA	11/29/21 15:10	11/30/21
L2165447-02	2101333-SD101(1-2')	SOIL	NEWBURYPORT, MA	11/29/21 15:15	11/30/21
L2165447-03	2101333-SD101(2-3')	SOIL	NEWBURYPORT, MA	11/29/21 15:30	11/30/21
L2165447-04	2101333-SD101(3-4.5')	SOIL	NEWBURYPORT, MA	11/29/21 15:35	11/30/21
L2165447-05	2101333-SD101(4.5-6')	SOIL	NEWBURYPORT, MA	11/29/21 15:40	11/30/21
L2165447-06	2101333-SD101(6-12')	SOIL	NEWBURYPORT, MA	11/29/21 15:45	11/30/21
L2165447-07	2101333-SD104(0-1')	SOIL	NEWBURYPORT, MA	11/29/21 14:30	11/30/21
L2165447-08	2101333-SD104(1-2')	SOIL	NEWBURYPORT, MA	11/29/21 14:35	11/30/21
L2165447-09	2101333-SD104(2-3.5')	SOIL	NEWBURYPORT, MA	11/29/21 14:40	11/30/21
L2165447-10	2101333-SD104(3.5-6')	SOIL	NEWBURYPORT, MA	11/29/21 14:45	11/30/21
L2165447-11	2101333-SD104(6-7.5')	SOIL	NEWBURYPORT, MA	11/29/21 14:50	11/30/21
L2165447-12	2101333-SD106(0-1')	SOIL	NEWBURYPORT, MA	11/29/21 13:35	11/30/21
L2165447-13	2101333-SD106(1-2.5')	SOIL	NEWBURYPORT, MA	11/29/21 13:40	11/30/21
L2165447-14	2101333-SD106(2.5-4.5')	SOIL	NEWBURYPORT, MA	11/29/21 13:45	11/30/21
L2165447-15	2101333-SD106(4.5-5.8')	SOIL	NEWBURYPORT, MA	11/29/21 13:50	11/30/21
L2165447-16	2101333-SD109(0-1')	SOIL	NEWBURYPORT, MA	11/29/21 12:20	11/30/21
L2165447-17	2101333-SD109(1-2.5')	SOIL	NEWBURYPORT, MA	11/29/21 12:25	11/30/21
L2165447-18	2101333-SD109(2.5-4')	SOIL	NEWBURYPORT, MA	11/29/21 12:30	11/30/21
L2165447-19	2101333-SD109(4-7')	SOIL	NEWBURYPORT, MA	11/29/21 12:35	11/30/21
L2165447-20	2101333-SD109(7-10')	SOIL	NEWBURYPORT, MA	11/29/21 12:40	11/30/21
L2165447-21	2101333-SD112(0-1')	SOIL	NEWBURYPORT, MA	11/29/21 11:00	11/30/21
L2165447-22	2101333-SD112(1-2')	SOIL	NEWBURYPORT, MA	11/29/21 11:05	11/30/21
L2165447-23	2101333-SD112(2-3')	SOIL	NEWBURYPORT, MA	11/29/21 11:10	11/30/21
L2165447-24	2101333-SD112(3-3.5')	SOIL	NEWBURYPORT, MA	11/29/21 11:15	11/30/21

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

### Case Narrative

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

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

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

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

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

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

---

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**Case Narrative (continued)**

Phosphorus, Total

The WG1581252-3 MS recovery, performed on L2165447-18, is outside the acceptance criteria for phosphorus, total (73%); however, the associated LCS recovery is within criteria. No further action was taken.

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

Authorized Signature:



Sebastian Corbin

Title: Technical Director/Representative

Date: 12/14/21

# **INORGANICS & MISCELLANEOUS**



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165447**Project Number:** 2101333**Report Date:** 12/14/21**SAMPLE RESULTS**

Lab ID: L2165447-01

Date Collected: 11/29/21 15:10

Client ID: 2101333-SD101(0-1')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	47.7		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1500		mg/kg	43	--	4.1	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-02  
**Client ID:** 2101333-SD101(1-2')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:15  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	53.7		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1200		mg/kg	39	--	4.2	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-03  
**Client ID:** 2101333-SD101(2-3')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:30  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	53.9		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	2000		mg/kg	41	--	4.4	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-04  
**Client ID:** 2101333-SD101(3-4.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:35  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	16.5		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1200		mg/kg	120	--	4.1	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-05  
**Client ID:** 2101333-SD101(4.5-6')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:40  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	17.4		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	500		mg/kg	130	--	4.5	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-06  
**Client ID:** 2101333-SD101(6-12')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 15:45  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	59.8		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	590		mg/kg	37	--	4.4	-	12/08/21 08:00	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

## SAMPLE RESULTS

Lab ID: L2165447-07

Date Collected: 11/29/21 14:30

Client ID: 2101333-SD104(0-1')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	36.6		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1800		mg/kg	63	--	4.6	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-08  
**Client ID:** 2101333-SD104(1-2')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 14:35  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	44.0		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1500		mg/kg	51	--	4.5	-	12/08/21 08:00	121,4500P-E	SD





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-09  
**Client ID:** 2101333-SD104(2-3.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 14:40  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	48.0		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	2000		mg/kg	50	--	4.8	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-10  
**Client ID:** 2101333-SD104(3.5-6')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 14:45  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	25.8		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	510		mg/kg	93	--	4.8	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-11  
**Client ID:** 2101333-SD104(6-7.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 14:50  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1600		mg/kg	26	--	4.1	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-12  
**Client ID:** 2101333-SD106(0-1')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 13:35  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	31.6		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1800		mg/kg	71	--	4.5	-	12/08/21 08:00	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

## SAMPLE RESULTS

Lab ID: L2165447-13

Date Collected: 11/29/21 13:40

Client ID: 2101333-SD106(1-2.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	35.3		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	2100		mg/kg	71	--	5	-	12/08/21 08:00	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

## SAMPLE RESULTS

Lab ID: L2165447-14

Date Collected: 11/29/21 13:45

Client ID: 2101333-SD106(2.5-4.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	48.7		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	2000		mg/kg	44	--	4.3	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-15  
**Client ID:** 2101333-SD106(4.5-5.8')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 13:50  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	15.2		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1200		mg/kg	130	--	4	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-16  
**Client ID:** 2101333-SD109(0-1')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 12:20  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	34.8		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1500		mg/kg	63	--	4.4	-	12/08/21 08:00	121,4500P-E	SD





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-17  
**Client ID:** 2101333-SD109(1-2.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 12:25  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	43.8		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1200		mg/kg	55	--	4.8	-	12/08/21 08:00	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-18  
**Client ID:** 2101333-SD109(2.5-4')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 12:30  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	50.4		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	1900		mg/kg	45	--	4.5	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-19  
**Client ID:** 2101333-SD109(4-7')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 12:35  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	14.4		%	0.100	NA	1	-	11/30/21 19:27	121,2540G	SB
Phosphorus, Total	960		mg/kg	140	--	4.1	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165447**Project Number:** 2101333**Report Date:** 12/14/21**SAMPLE RESULTS**

Lab ID: L2165447-20

Date Collected: 11/29/21 12:40

Client ID: 2101333-SD109(7-10')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	13.6		%	0.100	NA	1	-	11/30/21 19:43	121,2540G	SB
Phosphorus, Total	330		mg/kg	81	--	2.2	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-21  
**Client ID:** 2101333-SD112(0-1')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 11:00  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	11/30/21 19:43	121,2540G	SB
Phosphorus, Total	310		mg/kg	30	--	4.9	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-22  
**Client ID:** 2101333-SD112(1-2')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 11:05  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	66.5		%	0.100	NA	1	-	11/30/21 19:43	121,2540G	SB
Phosphorus, Total	400		mg/kg	36	--	4.8	-	12/10/21 09:30	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

## SAMPLE RESULTS

Lab ID: L2165447-23

Date Collected: 11/29/21 11:10

Client ID: 2101333-SD112(2-3')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.0		%	0.100	NA	1	-	11/30/21 19:43	121,2540G	SB
Phosphorus, Total	830		mg/kg	29	--	4.3	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

**SAMPLE RESULTS**

**Lab ID:** L2165447-24  
**Client ID:** 2101333-SD112(3-3.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/29/21 11:15  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	60.9		%	0.100	NA	1	-	11/30/21 19:43	121,2540G	SB
Phosphorus, Total	1200		mg/kg	42	--	5.1	-	12/10/21 09:30	121,4500P-E	SD





Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-17 Batch: WG1580264-1									
Phosphorus, Total	ND	mg/kg	4.5	--	.9	-	12/08/21 08:00	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 18-24 Batch: WG1581252-1									
Phosphorus, Total	ND	mg/kg	4.5	--	.9	-	12/10/21 09:30	121,4500P-E	SD

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

Parameter	LCS		LCSD		%Recovery Limits		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	%Recovery	Qual			
General Chemistry - Westborough Lab Associated sample(s): 01-17 Batch: WG1580264-2									
Phosphorus, Total	112		-		52-148		-		20
General Chemistry - Westborough Lab Associated sample(s): 18-24 Batch: WG1581252-2									
Phosphorus, Total	108		-		52-148		-		20



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

Parameter	Native Sample	MS Added	MS Found	%Recovery	MS Found	MSD Qual	%Recovery	MSD Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
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General Chemistry - Westborough Lab Associated sample(s): 01-17 QC Batch ID: WG1580264-3 QC Sample: L2164516-01 Client ID: MS Sample												
Phosphorus, Total	16000	370	18000	540	Q	-	-	75-125	-	-	-	20

General Chemistry - Westborough Lab Associated sample(s): 18-24 QC Batch ID: WG1581252-3 QC Sample: L2165447-18 Client ID: 2101333-SD109(2.5-4')												
Phosphorus, Total	1900	413	2200	73	Q	-	-	75-125	-	-	-	20



## Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-19 QC Batch ID: WG1577381-1 QC Sample: L2165447-01 Client ID: 2101333-SD101(0-1')						
Solids, Total	47.7	48.2	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 20-24 QC Batch ID: WG1577386-1 QC Sample: L2165299-01 Client ID: DUP Sample						
Solids, Total	87.8	87.5	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-17 QC Batch ID: WG1580264-4 QC Sample: L2164516-01 Client ID: DUP Sample						
Phosphorus, Total	16000	17000	mg/kg	6		20
General Chemistry - Westborough Lab Associated sample(s): 18-24 QC Batch ID: WG1581252-4 QC Sample: L2165447-18 Client ID: 2101333-SD109(2.5-4')						
Phosphorus, Total	1900	2000	mg/kg	5		20



Serial\_No:12142114:39

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165447

Project Number: 2101333

Report Date: 12/14/21

Sample Receipt and Container Information

YES

Were project specific reporting limits specified?

Cooler Information  
Cooler C  
Custody Seal Absent

Container Information		Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165447-01A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-01B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-02A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-02B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-03A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-03B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-04A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-04B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-05A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-05B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-06A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-06B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-07A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-07B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-08A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-08B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-09A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-09B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-10A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-10B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-11A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)
L2165447-11B	Glass 60mL/2oz unpreserved	NA	NA	2.5	Y	Absent		TPHOS-4500(28)
L2165447-12A	Plastic 2oz unpreserved for TS	NA	NA	2.5	Y	Absent		TS(7)

\*Values in parentheses indicate holding time in days



Container Information			Initial	Final	Temp	Frozen	Analysis(*)
Container ID	Container Type	Cooler	pH	pH	deg C	Date/Time	
L2165447-12B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-13A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-13B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-14A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-14B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-15A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-15B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-16A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-16B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-17A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-17B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-18A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-18B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-19A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-19B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-20A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-20B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-21A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-21B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-22A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-22B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-23A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-23B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)
L2165447-24A	Plastic 2oz unpreserved for TS	C	NA	2.5	Y	Y	TS(7)
L2165447-24B	Glass 60mL/2oz unpreserved	C	NA	2.5	Y	Y	TPHOS-4500(28)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

### Footnotes

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

### Terms

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

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

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

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

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

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

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

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

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

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165447  
**Report Date:** 12/14/21

## REFERENCES

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

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

# Chain-of-Custody Record

Laboratory: Alpha Analytical

Laboratory Job # **L2165447**



400 Unicorn Park Drive  
Woburn, MA 01801  
PH: 781.721.4000

Project Name: Newburyport Frog Pond  
Project Number: 2101333  
Send Report to: Krista Wolfe  
labdata@geiconsultants.com

Project Location: Newburyport, MA  
Project Manager: Krista Wolfe  
781-424-9909 kwolfe@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND  
MCP ANALYTICAL METHODS REQUIRED:  YES  NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS  
State/Federal Program: MA 401WQC Other NH RI CT NY ME  
MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials
		Date	Time			
05417-01	2101333-SD101 (0-1)	11/29/21	1510	SD	2	(W)
03	2101333-SD101 (1-2)	11/29/21	1515	SD	2	(W)
03	2101333-SD101 (2-3)	11/29/21	1530	SD	2	(W)
04	2101333-SD101 (3-4.5)	11/29/21	1535	SD	2	(W)
05	2101333-SD101 (4.5-6)	11/29/21	1540	SD	2	(W)
06	2101333-SD101 (6-12)	11/29/21	1545	SD	2	(W)
07	2101333-SD104 (0-1)	11/29/21	1430	SD	2	(W)
08	2101333-SD104 (1-2)	11/29/21	1435	SD	2	(W)
09	2101333-SD104 (2-3.5)	11/29/21	1440	SD	2	(W)
10	2101333-SD104 (3.5-6)	11/29/21	1445	SD	2	(W)
11	2101333-SD104 (6-7.5)	11/29/21	1450	SD	2	(W)
12	2101333-SD106 (0-1)	11/29/21	1335	SD	2	(W)

Relinquished by sampler (signature)	Date	Time	Received by (signature)	Time
<i>Krista Wolfe</i>	11-30-21	10:55	<i>OP Noel Davis</i>	
<i>OP Noel Davis</i>	11-30-21	12:45	<i>[Signature]</i>	

Turnaround Time (Business days):  
 5-Day  4-Day  3-Day   
 2-Day  1-Day  Other

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:





## ANALYTICAL REPORT

Lab Number:	L2165736
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/15/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165736-01	2101333-SD102(0-4")	SOIL	NEWBURYPORT, MA	11/30/21 12:30	12/01/21
L2165736-02	2101333-SD103(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 11:00	12/01/21
L2165736-03	2101333-SD105(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 14:10	12/01/21
L2165736-04	2101333-SD107(0-3')	SOIL	NEWBURYPORT, MA	11/30/21 11:50	12/01/21
L2165736-05	2101333-SD110(0-3')	SOIL	NEWBURYPORT, MA	11/30/21 13:20	12/01/21
L2165736-06	2101333-SD111(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 15:05	12/01/21



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

### Case Narrative

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

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

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

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

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

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

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**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Case Narrative (continued)**

Semivolatile Organics by SIM

L2165736-01, -02, -03, -04, -05, and -06D: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2165736-06D: The sample has elevated detection limits due to the dilution required by the sample matrix.

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

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 12/15/21

# ORGANICS

# VOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 17:49  
 Analyst: MKS  
 Percent Solids: 54%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	5.4	--	1
1,1-Dichloroethane	ND		ug/kg	1.1	--	1
Chloroform	ND		ug/kg	1.6	--	1
Carbon tetrachloride	ND		ug/kg	1.1	--	1
1,2-Dichloropropane	ND		ug/kg	1.1	--	1
Dibromochloromethane	ND		ug/kg	1.1	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.1	--	1
Tetrachloroethene	ND		ug/kg	0.54	--	1
Chlorobenzene	ND		ug/kg	0.54	--	1
Trichlorofluoromethane	ND		ug/kg	4.4	--	1
1,2-Dichloroethane	ND		ug/kg	1.1	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.54	--	1
Bromodichloromethane	ND		ug/kg	0.54	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.1	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.54	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.54	--	1
1,1-Dichloropropene	ND		ug/kg	0.54	--	1
Bromoform	ND		ug/kg	4.4	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.54	--	1
Benzene	ND		ug/kg	0.54	--	1
Toluene	ND		ug/kg	1.1	--	1
Ethylbenzene	ND		ug/kg	1.1	--	1
Chloromethane	ND		ug/kg	4.4	--	1
Bromomethane	ND		ug/kg	2.2	--	1
Vinyl chloride	ND		ug/kg	1.1	--	1
Chloroethane	ND		ug/kg	2.2	--	1
1,1-Dichloroethene	ND		ug/kg	1.1	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

## SAMPLE RESULTS

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.54	--	1
1,2-Dichlorobenzene	ND		ug/kg	2.2	--	1
1,3-Dichlorobenzene	ND		ug/kg	2.2	--	1
1,4-Dichlorobenzene	ND		ug/kg	2.2	--	1
Methyl tert butyl ether	ND		ug/kg	2.2	--	1
p/m-Xylene	ND		ug/kg	2.2	--	1
o-Xylene	ND		ug/kg	1.1	--	1
Xylenes, Total	ND		ug/kg	1.1	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.1	--	1
Dibromomethane	ND		ug/kg	2.2	--	1
1,4-Dichlorobutane	ND		ug/kg	11	--	1
1,2,3-Trichloropropane	ND		ug/kg	2.2	--	1
Styrene	ND		ug/kg	1.1	--	1
Dichlorodifluoromethane	ND		ug/kg	11	--	1
Acetone	96		ug/kg	27	--	1
Carbon disulfide	ND		ug/kg	11	--	1
2-Butanone	19		ug/kg	11	--	1
Vinyl acetate	ND		ug/kg	11	--	1
4-Methyl-2-pentanone	ND		ug/kg	11	--	1
2-Hexanone	ND		ug/kg	11	--	1
Ethyl methacrylate	ND		ug/kg	11	--	1
Acrylonitrile	ND		ug/kg	4.4	--	1
Bromochloromethane	ND		ug/kg	2.2	--	1
Tetrahydrofuran	ND		ug/kg	4.4	--	1
2,2-Dichloropropane	ND		ug/kg	2.2	--	1
1,2-Dibromoethane	ND		ug/kg	1.1	--	1
1,3-Dichloropropane	ND		ug/kg	2.2	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.54	--	1
Bromobenzene	ND		ug/kg	2.2	--	1
n-Butylbenzene	ND		ug/kg	1.1	--	1
sec-Butylbenzene	ND		ug/kg	1.1	--	1
tert-Butylbenzene	ND		ug/kg	2.2	--	1
o-Chlorotoluene	ND		ug/kg	2.2	--	1
p-Chlorotoluene	ND		ug/kg	2.2	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.3	--	1
Hexachlorobutadiene	ND		ug/kg	4.4	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.1	--	1
p-Isopropyltoluene	ND		ug/kg	1.1	--	1
Naphthalene	ND		ug/kg	4.4	--	1
n-Propylbenzene	ND		ug/kg	1.1	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.2	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.2	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.2	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.2	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.4	--	1
Ethyl ether	ND		ug/kg	2.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	97		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 18:14  
 Analyst: MKS  
 Percent Solids: 39%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	11	--	1
1,1-Dichloroethane	ND		ug/kg	2.2	--	1
Chloroform	ND		ug/kg	3.2	--	1
Carbon tetrachloride	ND		ug/kg	2.2	--	1
1,2-Dichloropropane	ND		ug/kg	2.2	--	1
Dibromochloromethane	ND		ug/kg	2.2	--	1
1,1,2-Trichloroethane	ND		ug/kg	2.2	--	1
Tetrachloroethene	ND		ug/kg	1.1	--	1
Chlorobenzene	ND		ug/kg	1.1	--	1
Trichlorofluoromethane	ND		ug/kg	8.6	--	1
1,2-Dichloroethane	ND		ug/kg	2.2	--	1
1,1,1-Trichloroethane	ND		ug/kg	1.1	--	1
Bromodichloromethane	ND		ug/kg	1.1	--	1
trans-1,3-Dichloropropene	ND		ug/kg	2.2	--	1
cis-1,3-Dichloropropene	ND		ug/kg	1.1	--	1
1,3-Dichloropropene, Total	ND		ug/kg	1.1	--	1
1,1-Dichloropropene	ND		ug/kg	1.1	--	1
Bromoform	ND		ug/kg	8.6	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.1	--	1
Benzene	ND		ug/kg	1.1	--	1
Toluene	ND		ug/kg	2.2	--	1
Ethylbenzene	ND		ug/kg	2.2	--	1
Chloromethane	ND		ug/kg	8.6	--	1
Bromomethane	ND		ug/kg	4.3	--	1
Vinyl chloride	ND		ug/kg	2.2	--	1
Chloroethane	ND		ug/kg	4.3	--	1
1,1-Dichloroethene	ND		ug/kg	2.2	--	1
trans-1,2-Dichloroethene	ND		ug/kg	3.2	--	1

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	1.1	--	1
1,2-Dichlorobenzene	ND		ug/kg	4.3	--	1
1,3-Dichlorobenzene	ND		ug/kg	4.3	--	1
1,4-Dichlorobenzene	ND		ug/kg	4.3	--	1
Methyl tert butyl ether	ND		ug/kg	4.3	--	1
p/m-Xylene	ND		ug/kg	4.3	--	1
o-Xylene	ND		ug/kg	2.2	--	1
Xylenes, Total	ND		ug/kg	2.2	--	1
cis-1,2-Dichloroethene	ND		ug/kg	2.2	--	1
1,2-Dichloroethene, Total	ND		ug/kg	2.2	--	1
Dibromomethane	ND		ug/kg	4.3	--	1
1,4-Dichlorobutane	ND		ug/kg	22	--	1
1,2,3-Trichloropropane	ND		ug/kg	4.3	--	1
Styrene	ND		ug/kg	2.2	--	1
Dichlorodifluoromethane	ND		ug/kg	22	--	1
Acetone	120		ug/kg	54	--	1
Carbon disulfide	ND		ug/kg	22	--	1
2-Butanone	24		ug/kg	22	--	1
Vinyl acetate	ND		ug/kg	22	--	1
4-Methyl-2-pentanone	ND		ug/kg	22	--	1
2-Hexanone	ND		ug/kg	22	--	1
Ethyl methacrylate	ND		ug/kg	22	--	1
Acrylonitrile	ND		ug/kg	8.6	--	1
Bromochloromethane	ND		ug/kg	4.3	--	1
Tetrahydrofuran	ND		ug/kg	8.6	--	1
2,2-Dichloropropane	ND		ug/kg	4.3	--	1
1,2-Dibromoethane	ND		ug/kg	2.2	--	1
1,3-Dichloropropane	ND		ug/kg	4.3	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.1	--	1
Bromobenzene	ND		ug/kg	4.3	--	1
n-Butylbenzene	ND		ug/kg	2.2	--	1
sec-Butylbenzene	ND		ug/kg	2.2	--	1
tert-Butylbenzene	ND		ug/kg	4.3	--	1
o-Chlorotoluene	ND		ug/kg	4.3	--	1
p-Chlorotoluene	ND		ug/kg	4.3	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	6.5	--	1
Hexachlorobutadiene	ND		ug/kg	8.6	--	1



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	2.2	--	1
p-Isopropyltoluene	ND		ug/kg	2.2	--	1
Naphthalene	ND		ug/kg	8.6	--	1
n-Propylbenzene	ND		ug/kg	2.2	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	4.3	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	4.3	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	4.3	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	4.3	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	11	--	1
Ethyl ether	ND		ug/kg	4.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	126		70-130
Dibromofluoromethane	98		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 18:39  
 Analyst: MKS  
 Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	6.1	--	1
1,1-Dichloroethane	ND		ug/kg	1.2	--	1
Chloroform	ND		ug/kg	1.8	--	1
Carbon tetrachloride	ND		ug/kg	1.2	--	1
1,2-Dichloropropane	ND		ug/kg	1.2	--	1
Dibromochloromethane	ND		ug/kg	1.2	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.2	--	1
Tetrachloroethene	ND		ug/kg	0.61	--	1
Chlorobenzene	ND		ug/kg	0.61	--	1
Trichlorofluoromethane	ND		ug/kg	4.9	--	1
1,2-Dichloroethane	ND		ug/kg	1.2	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.61	--	1
Bromodichloromethane	ND		ug/kg	0.61	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.61	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.61	--	1
1,1-Dichloropropene	ND		ug/kg	0.61	--	1
Bromoform	ND		ug/kg	4.9	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.61	--	1
Benzene	ND		ug/kg	0.61	--	1
Toluene	ND		ug/kg	1.2	--	1
Ethylbenzene	ND		ug/kg	1.2	--	1
Chloromethane	ND		ug/kg	4.9	--	1
Bromomethane	ND		ug/kg	2.4	--	1
Vinyl chloride	ND		ug/kg	1.2	--	1
Chloroethane	ND		ug/kg	2.4	--	1
1,1-Dichloroethene	ND		ug/kg	1.2	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.8	--	1

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.61	--	1
1,2-Dichlorobenzene	ND		ug/kg	2.4	--	1
1,3-Dichlorobenzene	ND		ug/kg	2.4	--	1
1,4-Dichlorobenzene	ND		ug/kg	2.4	--	1
Methyl tert butyl ether	ND		ug/kg	2.4	--	1
p/m-Xylene	ND		ug/kg	2.4	--	1
o-Xylene	ND		ug/kg	1.2	--	1
Xylenes, Total	ND		ug/kg	1.2	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.2	--	1
Dibromomethane	ND		ug/kg	2.4	--	1
1,4-Dichlorobutane	ND		ug/kg	12	--	1
1,2,3-Trichloropropane	ND		ug/kg	2.4	--	1
Styrene	ND		ug/kg	1.2	--	1
Dichlorodifluoromethane	ND		ug/kg	12	--	1
Acetone	150		ug/kg	30	--	1
Carbon disulfide	ND		ug/kg	12	--	1
2-Butanone	30		ug/kg	12	--	1
Vinyl acetate	ND		ug/kg	12	--	1
4-Methyl-2-pentanone	ND		ug/kg	12	--	1
2-Hexanone	ND		ug/kg	12	--	1
Ethyl methacrylate	ND		ug/kg	12	--	1
Acrylonitrile	ND		ug/kg	4.9	--	1
Bromochloromethane	ND		ug/kg	2.4	--	1
Tetrahydrofuran	ND		ug/kg	4.9	--	1
2,2-Dichloropropane	ND		ug/kg	2.4	--	1
1,2-Dibromoethane	ND		ug/kg	1.2	--	1
1,3-Dichloropropane	ND		ug/kg	2.4	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.61	--	1
Bromobenzene	ND		ug/kg	2.4	--	1
n-Butylbenzene	ND		ug/kg	1.2	--	1
sec-Butylbenzene	ND		ug/kg	1.2	--	1
tert-Butylbenzene	ND		ug/kg	2.4	--	1
o-Chlorotoluene	ND		ug/kg	2.4	--	1
p-Chlorotoluene	ND		ug/kg	2.4	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.6	--	1
Hexachlorobutadiene	ND		ug/kg	4.9	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.2	--	1
p-Isopropyltoluene	ND		ug/kg	1.2	--	1
Naphthalene	ND		ug/kg	4.9	--	1
n-Propylbenzene	ND		ug/kg	1.2	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.4	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.4	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.4	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.4	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	6.1	--	1
Ethyl ether	ND		ug/kg	2.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	99		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 19:04  
 Analyst: MKS  
 Percent Solids: 39%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	7.5	--	1
1,1-Dichloroethane	ND		ug/kg	1.5	--	1
Chloroform	ND		ug/kg	2.2	--	1
Carbon tetrachloride	ND		ug/kg	1.5	--	1
1,2-Dichloropropane	ND		ug/kg	1.5	--	1
Dibromochloromethane	ND		ug/kg	1.5	--	1
1,1,2-Trichloroethane	ND		ug/kg	1.5	--	1
Tetrachloroethene	ND		ug/kg	0.75	--	1
Chlorobenzene	ND		ug/kg	0.75	--	1
Trichlorofluoromethane	ND		ug/kg	6.0	--	1
1,2-Dichloroethane	ND		ug/kg	1.5	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.75	--	1
Bromodichloromethane	ND		ug/kg	0.75	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.5	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.75	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.75	--	1
1,1-Dichloropropene	ND		ug/kg	0.75	--	1
Bromoform	ND		ug/kg	6.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.75	--	1
Benzene	ND		ug/kg	0.75	--	1
Toluene	ND		ug/kg	1.5	--	1
Ethylbenzene	ND		ug/kg	1.5	--	1
Chloromethane	ND		ug/kg	6.0	--	1
Bromomethane	ND		ug/kg	3.0	--	1
Vinyl chloride	ND		ug/kg	1.5	--	1
Chloroethane	ND		ug/kg	3.0	--	1
1,1-Dichloroethene	ND		ug/kg	1.5	--	1
trans-1,2-Dichloroethene	ND		ug/kg	2.2	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

## SAMPLE RESULTS

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.75	--	1
1,2-Dichlorobenzene	ND		ug/kg	3.0	--	1
1,3-Dichlorobenzene	ND		ug/kg	3.0	--	1
1,4-Dichlorobenzene	ND		ug/kg	3.0	--	1
Methyl tert butyl ether	ND		ug/kg	3.0	--	1
p/m-Xylene	ND		ug/kg	3.0	--	1
o-Xylene	ND		ug/kg	1.5	--	1
Xylenes, Total	ND		ug/kg	1.5	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.5	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.5	--	1
Dibromomethane	ND		ug/kg	3.0	--	1
1,4-Dichlorobutane	ND		ug/kg	15	--	1
1,2,3-Trichloropropane	ND		ug/kg	3.0	--	1
Styrene	ND		ug/kg	1.5	--	1
Dichlorodifluoromethane	ND		ug/kg	15	--	1
Acetone	69		ug/kg	38	--	1
Carbon disulfide	ND		ug/kg	15	--	1
2-Butanone	ND		ug/kg	15	--	1
Vinyl acetate	ND		ug/kg	15	--	1
4-Methyl-2-pentanone	ND		ug/kg	15	--	1
2-Hexanone	ND		ug/kg	15	--	1
Ethyl methacrylate	ND		ug/kg	15	--	1
Acrylonitrile	ND		ug/kg	6.0	--	1
Bromochloromethane	ND		ug/kg	3.0	--	1
Tetrahydrofuran	ND		ug/kg	6.0	--	1
2,2-Dichloropropane	ND		ug/kg	3.0	--	1
1,2-Dibromoethane	ND		ug/kg	1.5	--	1
1,3-Dichloropropane	ND		ug/kg	3.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.75	--	1
Bromobenzene	ND		ug/kg	3.0	--	1
n-Butylbenzene	ND		ug/kg	1.5	--	1
sec-Butylbenzene	ND		ug/kg	1.5	--	1
tert-Butylbenzene	ND		ug/kg	3.0	--	1
o-Chlorotoluene	ND		ug/kg	3.0	--	1
p-Chlorotoluene	ND		ug/kg	3.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	4.5	--	1
Hexachlorobutadiene	ND		ug/kg	6.0	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.5	--	1
p-Isopropyltoluene	ND		ug/kg	1.5	--	1
Naphthalene	ND		ug/kg	6.0	--	1
n-Propylbenzene	ND		ug/kg	1.5	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	3.0	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	3.0	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	3.0	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	3.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	7.5	--	1
Ethyl ether	ND		ug/kg	3.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	98		70-130

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 19:29  
 Analyst: MKS  
 Percent Solids: 50%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	4.4	--	1
1,1-Dichloroethane	ND		ug/kg	0.87	--	1
Chloroform	ND		ug/kg	1.3	--	1
Carbon tetrachloride	ND		ug/kg	0.87	--	1
1,2-Dichloropropane	ND		ug/kg	0.87	--	1
Dibromochloromethane	ND		ug/kg	0.87	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.87	--	1
Tetrachloroethene	ND		ug/kg	0.44	--	1
Chlorobenzene	ND		ug/kg	0.44	--	1
Trichlorofluoromethane	ND		ug/kg	3.5	--	1
1,2-Dichloroethane	ND		ug/kg	0.87	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.44	--	1
Bromodichloromethane	ND		ug/kg	0.44	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.87	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.44	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.44	--	1
1,1-Dichloropropene	ND		ug/kg	0.44	--	1
Bromoform	ND		ug/kg	3.5	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.44	--	1
Benzene	ND		ug/kg	0.44	--	1
Toluene	ND		ug/kg	0.87	--	1
Ethylbenzene	ND		ug/kg	0.87	--	1
Chloromethane	ND		ug/kg	3.5	--	1
Bromomethane	ND		ug/kg	1.7	--	1
Vinyl chloride	ND		ug/kg	0.87	--	1
Chloroethane	ND		ug/kg	1.7	--	1
1,1-Dichloroethene	ND		ug/kg	0.87	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	--	1



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.44	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.7	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.7	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.7	--	1
Methyl tert butyl ether	ND		ug/kg	1.7	--	1
p/m-Xylene	ND		ug/kg	1.7	--	1
o-Xylene	ND		ug/kg	0.87	--	1
Xylenes, Total	ND		ug/kg	0.87	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.87	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.87	--	1
Dibromomethane	ND		ug/kg	1.7	--	1
1,4-Dichlorobutane	ND		ug/kg	8.7	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.7	--	1
Styrene	ND		ug/kg	0.87	--	1
Dichlorodifluoromethane	ND		ug/kg	8.7	--	1
Acetone	57		ug/kg	22	--	1
Carbon disulfide	ND		ug/kg	8.7	--	1
2-Butanone	12		ug/kg	8.7	--	1
Vinyl acetate	ND		ug/kg	8.7	--	1
4-Methyl-2-pentanone	ND		ug/kg	8.7	--	1
2-Hexanone	ND		ug/kg	8.7	--	1
Ethyl methacrylate	ND		ug/kg	8.7	--	1
Acrylonitrile	ND		ug/kg	3.5	--	1
Bromochloromethane	ND		ug/kg	1.7	--	1
Tetrahydrofuran	ND		ug/kg	3.5	--	1
2,2-Dichloropropane	ND		ug/kg	1.7	--	1
1,2-Dibromoethane	ND		ug/kg	0.87	--	1
1,3-Dichloropropane	ND		ug/kg	1.7	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.44	--	1
Bromobenzene	ND		ug/kg	1.7	--	1
n-Butylbenzene	ND		ug/kg	0.87	--	1
sec-Butylbenzene	ND		ug/kg	0.87	--	1
tert-Butylbenzene	ND		ug/kg	1.7	--	1
o-Chlorotoluene	ND		ug/kg	1.7	--	1
p-Chlorotoluene	ND		ug/kg	1.7	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.6	--	1
Hexachlorobutadiene	ND		ug/kg	3.5	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	0.87	--	1
p-Isopropyltoluene	ND		ug/kg	0.87	--	1
Naphthalene	ND		ug/kg	3.5	--	1
n-Propylbenzene	ND		ug/kg	0.87	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.7	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.7	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.7	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.7	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.4	--	1
Ethyl ether	ND		ug/kg	1.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	100		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-06  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 12/10/21 19:54  
 Analyst: MKS  
 Percent Solids: 55%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methylene chloride	ND		ug/kg	4.4	--	1
1,1-Dichloroethane	ND		ug/kg	0.89	--	1
Chloroform	ND		ug/kg	1.3	--	1
Carbon tetrachloride	ND		ug/kg	0.89	--	1
1,2-Dichloropropane	ND		ug/kg	0.89	--	1
Dibromochloromethane	ND		ug/kg	0.89	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.89	--	1
Tetrachloroethene	ND		ug/kg	0.44	--	1
Chlorobenzene	ND		ug/kg	0.44	--	1
Trichlorofluoromethane	ND		ug/kg	3.6	--	1
1,2-Dichloroethane	ND		ug/kg	0.89	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.44	--	1
Bromodichloromethane	ND		ug/kg	0.44	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.89	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.44	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.44	--	1
1,1-Dichloropropene	ND		ug/kg	0.44	--	1
Bromoform	ND		ug/kg	3.6	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.44	--	1
Benzene	ND		ug/kg	0.44	--	1
Toluene	ND		ug/kg	0.89	--	1
Ethylbenzene	ND		ug/kg	0.89	--	1
Chloromethane	ND		ug/kg	3.6	--	1
Bromomethane	ND		ug/kg	1.8	--	1
Vinyl chloride	ND		ug/kg	0.89	--	1
Chloroethane	ND		ug/kg	1.8	--	1
1,1-Dichloroethene	ND		ug/kg	0.89	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	--	1

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

## SAMPLE RESULTS

Lab ID: L2165736-06  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.44	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.8	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.8	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.8	--	1
Methyl tert butyl ether	ND		ug/kg	1.8	--	1
p/m-Xylene	ND		ug/kg	1.8	--	1
o-Xylene	ND		ug/kg	0.89	--	1
Xylenes, Total	ND		ug/kg	0.89	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.89	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.89	--	1
Dibromomethane	ND		ug/kg	1.8	--	1
1,4-Dichlorobutane	ND		ug/kg	8.9	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.8	--	1
Styrene	ND		ug/kg	0.89	--	1
Dichlorodifluoromethane	ND		ug/kg	8.9	--	1
Acetone	77		ug/kg	22	--	1
Carbon disulfide	ND		ug/kg	8.9	--	1
2-Butanone	18		ug/kg	8.9	--	1
Vinyl acetate	ND		ug/kg	8.9	--	1
4-Methyl-2-pentanone	ND		ug/kg	8.9	--	1
2-Hexanone	ND		ug/kg	8.9	--	1
Ethyl methacrylate	ND		ug/kg	8.9	--	1
Acrylonitrile	ND		ug/kg	3.6	--	1
Bromochloromethane	ND		ug/kg	1.8	--	1
Tetrahydrofuran	ND		ug/kg	3.6	--	1
2,2-Dichloropropane	ND		ug/kg	1.8	--	1
1,2-Dibromoethane	ND		ug/kg	0.89	--	1
1,3-Dichloropropane	ND		ug/kg	1.8	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.44	--	1
Bromobenzene	ND		ug/kg	1.8	--	1
n-Butylbenzene	ND		ug/kg	0.89	--	1
sec-Butylbenzene	ND		ug/kg	0.89	--	1
tert-Butylbenzene	ND		ug/kg	1.8	--	1
o-Chlorotoluene	ND		ug/kg	1.8	--	1
p-Chlorotoluene	ND		ug/kg	1.8	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.7	--	1
Hexachlorobutadiene	ND		ug/kg	3.6	--	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-06  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Isopropylbenzene	ND		ug/kg	0.89	--	1
p-Isopropyltoluene	ND		ug/kg	0.89	--	1
Naphthalene	ND		ug/kg	3.6	--	1
n-Propylbenzene	ND		ug/kg	0.89	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.8	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.8	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.8	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.8	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.4	--	1
Ethyl ether	ND		ug/kg	1.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	99		70-130

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/10/21 16:59  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-06 Batch: WG1582068-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
2-Chloroethylvinyl ether	ND		ug/kg	20	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
Analytical Date: 12/10/21 16:59  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-06 Batch: WG1582068-5					
Trichloroethene	ND		ug/kg	0.50	--
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,4-Dichlorobutane	ND		ug/kg	10	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
2-Butanone	ND		ug/kg	10	--
Vinyl acetate	ND		ug/kg	10	--
4-Methyl-2-pentanone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Ethyl methacrylate	ND		ug/kg	10	--
Acrolein	ND		ug/kg	25	--
Acrylonitrile	ND		ug/kg	4.0	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/10/21 16:59  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-06 Batch: WG1582068-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
1,3,5-Trichlorobenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	--
Ethyl ether	ND		ug/kg	2.0	--
Methyl Acetate	ND		ug/kg	4.0	--
Ethyl Acetate	ND		ug/kg	10	--
Isopropyl Ether	ND		ug/kg	2.0	--
Cyclohexane	ND		ug/kg	10	--
Tert-Butyl Alcohol	ND		ug/kg	20	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	--
1,4-Dioxane	ND		ug/kg	80	--
Methyl cyclohexane	ND		ug/kg	4.0	--



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 12/10/21 16:59  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-06 Batch: WG1582068-5					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	4.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	95		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD	Qual	RPD	Limits
	%Recovery	Qual	%Recovery	Qual	%Recovery	Limits						
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-06 Batch: WG1582068-3 WG1582068-4												
Methylene chloride	88		86		70-130		2		2			30
1,1-Dichloroethane	105		103		70-130		2		2			30
Chloroform	94		93		70-130		1		1			30
Carbon tetrachloride	105		102		70-130		3		3			30
1,2-Dichloropropane	101		99		70-130		2		2			30
Dibromochloromethane	87		86		70-130		1		1			30
1,1,2-Trichloroethane	96		95		70-130		1		1			30
2-Chloroethylvinyl ether	95		94		70-130		1		1			30
Tetrachloroethene	103		100		70-130		3		3			30
Chlorobenzene	99		98		70-130		1		1			30
Trichlorofluoromethane	71		68	Q	70-139		4		4			30
1,2-Dichloroethane	97		95		70-130		2		2			30
1,1,1-Trichloroethane	106		103		70-130		3		3			30
Bromodichloromethane	99		98		70-130		1		1			30
trans-1,3-Dichloropropene	110		110		70-130		0		0			30
cis-1,3-Dichloropropene	102		102		70-130		0		0			30
1,1-Dichloropropene	109		106		70-130		3		3			30
Bromoform	90		90		70-130		0		0			30
1,1,2,2-Tetrachloroethane	102		102		70-130		0		0			30
Benzene	100		98		70-130		2		2			30
Toluene	103		103		70-130		0		0			30
Ethylbenzene	106		103		70-130		3		3			30
Chloromethane	140	Q	139	Q	52-130		1		1			30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-06 Batch: WG1582068-3 WG1582068-4								
Bromomethane	63		61		57-147		3	30
Vinyl chloride	104		99		67-130		5	30
Chloroethane	72		69		50-151		4	30
1,1-Dichloroethene	102		100		65-135		2	30
trans-1,2-Dichloroethene	98		97		70-130		1	30
Trichloroethene	98		98		70-130		0	30
1,2-Dichlorobenzene	94		94		70-130		0	30
1,3-Dichlorobenzene	97		96		70-130		1	30
1,4-Dichlorobenzene	96		95		70-130		1	30
Methyl tert butyl ether	96		95		66-130		1	30
p/m-Xylene	102		100		70-130		2	30
o-Xylene	100		98		70-130		2	30
cis-1,2-Dichloroethene	94		93		70-130		1	30
Dibromomethane	88		88		70-130		0	30
1,4-Dichlorobutane	118		117		70-130		1	30
1,2,3-Trichloropropane	96		98		68-130		2	30
Styrene	85		85		70-130		0	30
Dichlorodifluoromethane	130		127		30-146		2	30
Acetone	110		109		54-140		1	30
Carbon disulfide	104		102		59-130		2	30
2-Butanone	107		106		70-130		1	30
Vinyl acetate	118		118		70-130		0	30
4-Methyl-2-pentanone	104		103		70-130		1	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-06 Batch: WG1582068-3 WG1582068-4								
2-Hexanone	110		108		70-130		2	30
Ethyl methacrylate	102		100		70-130		2	30
Acrolein	120		120		70-130		0	30
Acrylonitrile	108		108		70-130		0	30
Bromochloromethane	82		81		70-130		1	30
Tetrahydrofuran	110		109		66-130		1	30
2,2-Dichloropropane	111		107		70-130		4	30
1,2-Dibromoethane	96		94		70-130		2	30
1,3-Dichloropropane	99		98		69-130		1	30
1,1,1,2-Tetrachloroethane	99		98		70-130		1	30
Bromobenzene	94		95		70-130		1	30
n-Butylbenzene	116		114		70-130		2	30
sec-Butylbenzene	111		110		70-130		1	30
tert-Butylbenzene	105		105		70-130		0	30
1,3,5-Trichlorobenzene	108		108		70-139		0	30
o-Chlorotoluene	130		128		70-130		2	30
p-Chlorotoluene	110		109		70-130		1	30
1,2-Dibromo-3-chloropropane	95		94		68-130		1	30
Hexachlorobutadiene	117		116		67-130		1	30
Isopropylbenzene	109		108		70-130		1	30
p-Isopropyltoluene	108		107		70-130		1	30
Naphthalene	95		96		70-130		1	30
n-Propylbenzene	112		111		70-130		1	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-06 Batch: WG1582068-3 WG1582068-4								
1,2,3-Trichlorobenzene	100		99		70-130	1	1	30
1,2,4-Trichlorobenzene	105		104		70-130	1	1	30
1,3,5-Trimethylbenzene	106		106		70-130	0	0	30
1,2,4-Trimethylbenzene	104		104		70-130	0	0	30
trans-1,4-Dichloro-2-butene	126		125		70-130	1	1	30
Ethyl ether	98		94		67-130	4	4	30
Methyl Acetate	108		105		65-130	3	3	30
Ethyl Acetate	108		106		70-130	2	2	30
Isopropyl Ether	119		118		66-130	1	1	30
Cyclohexane	124		120		70-130	3	3	30
Tert-Butyl Alcohol	99		99		70-130	0	0	30
Ethyl-Tert-Butyl-Ether	107		106		70-130	1	1	30
Tertiary-Amyl Methyl Ether	97		96		70-130	1	1	30
1,4-Dioxane	100		100		65-136	0	0	30
Methyl cyclohexane	112		110		70-130	2	2	30
1,1,2-Trichloro-1,2,2-Trifluoroethane	107		104		70-130	3	3	30

Surrogate	LCS		LCSD		Acceptance Criteria	
	%Recovery	Qual	%Recovery	Qual	Qual	Criteria
1,2-Dichloroethane-d4	104		105		104	70-130
Toluene-d8	107		107		107	70-130
4-Bromofluorobenzene	116		115		115	70-130
Dibromofluoromethane	96		94		94	70-130



# SEMIVOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/13/21 16:23  
 Analyst: DV  
 Percent Solids: 54%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	36	--	1
2-Chloronaphthalene	ND		ug/kg	36	--	1
Fluoranthene	130		ug/kg	36	--	1
Naphthalene	57		ug/kg	36	--	1
Benzo(a)anthracene	62		ug/kg	36	--	1
Benzo(a)pyrene	40		ug/kg	36	--	1
Benzo(b)fluoranthene	59		ug/kg	36	--	1
Benzo(k)fluoranthene	ND		ug/kg	36	--	1
Chrysene	48		ug/kg	36	--	1
Acenaphthylene	ND		ug/kg	36	--	1
Anthracene	45		ug/kg	36	--	1
Benzo(ghi)perylene	ND		ug/kg	36	--	1
Fluorene	56		ug/kg	36	--	1
Phenanthrene	150		ug/kg	36	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	36	--	1
Indeno(1,2,3-cd)pyrene	36		ug/kg	36	--	1
Pyrene	100		ug/kg	36	--	1
1-Methylnaphthalene	ND		ug/kg	36	--	1
2-Methylnaphthalene	ND		ug/kg	36	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	74		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/14/21 15:36  
 Analyst: DV  
 Percent Solids: 39%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	55		ug/kg	47	--	1
2-Chloronaphthalene	ND		ug/kg	47	--	1
Fluoranthene	1900		ug/kg	47	--	1
Naphthalene	320		ug/kg	47	--	1
Benzo(a)anthracene	1100		ug/kg	47	--	1
Benzo(a)pyrene	1000		ug/kg	47	--	1
Benzo(b)fluoranthene	1500		ug/kg	47	--	1
Benzo(k)fluoranthene	520		ug/kg	47	--	1
Chrysene	1100		ug/kg	47	--	1
Acenaphthylene	250		ug/kg	47	--	1
Anthracene	320		ug/kg	47	--	1
Benzo(ghi)perylene	760		ug/kg	47	--	1
Fluorene	210		ug/kg	47	--	1
Phenanthrene	1000		ug/kg	47	--	1
Dibenzo(a,h)anthracene	200		ug/kg	47	--	1
Indeno(1,2,3-cd)pyrene	930		ug/kg	47	--	1
Pyrene	1600		ug/kg	47	--	1
1-Methylnaphthalene	62		ug/kg	47	--	1
2-Methylnaphthalene	130		ug/kg	47	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	72		18-120



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/13/21 16:55  
 Analyst: DV  
 Percent Solids: 42%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	45	--	1
2-Chloronaphthalene	ND		ug/kg	45	--	1
Fluoranthene	150		ug/kg	45	--	1
Naphthalene	62		ug/kg	45	--	1
Benzo(a)anthracene	79		ug/kg	45	--	1
Benzo(a)pyrene	51		ug/kg	45	--	1
Benzo(b)fluoranthene	78		ug/kg	45	--	1
Benzo(k)fluoranthene	ND		ug/kg	45	--	1
Chrysene	58		ug/kg	45	--	1
Acenaphthylene	ND		ug/kg	45	--	1
Anthracene	ND		ug/kg	45	--	1
Benzo(ghi)perylene	ND		ug/kg	45	--	1
Fluorene	ND		ug/kg	45	--	1
Phenanthrene	130		ug/kg	45	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	45	--	1
Indeno(1,2,3-cd)pyrene	48		ug/kg	45	--	1
Pyrene	120		ug/kg	45	--	1
1-Methylnaphthalene	ND		ug/kg	45	--	1
2-Methylnaphthalene	ND		ug/kg	45	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/13/21 17:12  
 Analyst: DV  
 Percent Solids: 39%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	51	--	1
2-Chloronaphthalene	ND		ug/kg	51	--	1
Fluoranthene	85		ug/kg	51	--	1
Naphthalene	ND		ug/kg	51	--	1
Benzo(a)anthracene	51		ug/kg	51	--	1
Benzo(a)pyrene	ND		ug/kg	51	--	1
Benzo(b)fluoranthene	ND		ug/kg	51	--	1
Benzo(k)fluoranthene	ND		ug/kg	51	--	1
Chrysene	ND		ug/kg	51	--	1
Acenaphthylene	ND		ug/kg	51	--	1
Anthracene	ND		ug/kg	51	--	1
Benzo(ghi)perylene	ND		ug/kg	51	--	1
Fluorene	73		ug/kg	51	--	1
Phenanthrene	85		ug/kg	51	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	51	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	51	--	1
Pyrene	73		ug/kg	51	--	1
1-Methylnaphthalene	ND		ug/kg	51	--	1
2-Methylnaphthalene	ND		ug/kg	51	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/13/21 17:28  
 Analyst: DV  
 Percent Solids: 50%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	38	--	1
2-Chloronaphthalene	ND		ug/kg	38	--	1
Fluoranthene	120		ug/kg	38	--	1
Naphthalene	ND		ug/kg	38	--	1
Benzo(a)anthracene	51		ug/kg	38	--	1
Benzo(a)pyrene	ND		ug/kg	38	--	1
Benzo(b)fluoranthene	ND		ug/kg	38	--	1
Benzo(k)fluoranthene	ND		ug/kg	38	--	1
Chrysene	ND		ug/kg	38	--	1
Acenaphthylene	ND		ug/kg	38	--	1
Anthracene	42		ug/kg	38	--	1
Benzo(ghi)perylene	ND		ug/kg	38	--	1
Fluorene	ND		ug/kg	38	--	1
Phenanthrene	140		ug/kg	38	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	38	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	38	--	1
Pyrene	96		ug/kg	38	--	1
1-Methylnaphthalene	ND		ug/kg	38	--	1
2-Methylnaphthalene	ND		ug/kg	38	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-06 D  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/15/21 12:05  
 Analyst: DV  
 Percent Solids: 55%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	340	--	10
2-Chloronaphthalene	ND		ug/kg	340	--	10
Fluoranthene	14000		ug/kg	340	--	10
Naphthalene	1100		ug/kg	340	--	10
Benzo(a)anthracene	5600		ug/kg	340	--	10
Benzo(a)pyrene	6200		ug/kg	340	--	10
Benzo(b)fluoranthene	9100		ug/kg	340	--	10
Benzo(k)fluoranthene	3300		ug/kg	340	--	10
Chrysene	7500		ug/kg	340	--	10
Acenaphthylene	2000		ug/kg	340	--	10
Anthracene	1300		ug/kg	340	--	10
Benzo(ghi)perylene	4000		ug/kg	340	--	10
Fluorene	990		ug/kg	340	--	10
Phenanthrene	6000		ug/kg	340	--	10
Dibenzo(a,h)anthracene	850		ug/kg	340	--	10
Indeno(1,2,3-cd)pyrene	4700		ug/kg	340	--	10
Pyrene	13000		ug/kg	340	--	10
1-Methylnaphthalene	ND		ug/kg	340	--	10
2-Methylnaphthalene	590		ug/kg	340	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 12/13/21 16:06  
Analyst: RP

Extraction Method: EPA 3546  
Extraction Date: 12/11/21 16:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-06 Batch: WG1582145-1					
Acenaphthene	ND		ug/kg	6.6	--
2-Chloronaphthalene	ND		ug/kg	6.6	--
Fluoranthene	ND		ug/kg	6.6	--
Naphthalene	ND		ug/kg	6.6	--
Benzo(a)anthracene	ND		ug/kg	6.6	--
Benzo(a)pyrene	ND		ug/kg	6.6	--
Benzo(b)fluoranthene	ND		ug/kg	6.6	--
Benzo(k)fluoranthene	ND		ug/kg	6.6	--
Chrysene	ND		ug/kg	6.6	--
Acenaphthylene	ND		ug/kg	6.6	--
Anthracene	ND		ug/kg	6.6	--
Benzo(ghi)perylene	ND		ug/kg	6.6	--
Fluorene	ND		ug/kg	6.6	--
Phenanthrene	ND		ug/kg	6.6	--
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	--
Pyrene	ND		ug/kg	6.6	--
1-Methylnaphthalene	ND		ug/kg	6.6	--
2-Methylnaphthalene	ND		ug/kg	6.6	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	79		18-120

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-06 Batch: WG1582145-2 WG1582145-3								
Acenaphthene	72		59		40-140		20	50
2-Chloronaphthalene	74		61		40-140		19	50
Fluoranthene	79		64		40-140		21	50
Naphthalene	71		58		40-140		20	50
Benzo(a)anthracene	90		70		40-140		25	50
Benzo(a)pyrene	85		70		40-140		19	50
Benzo(b)fluoranthene	82		70		40-140		16	50
Benzo(k)fluoranthene	77		62		40-140		22	50
Chrysene	70		57		40-140		20	50
Acenaphthylene	80		65		40-140		21	50
Anthracene	77		63		40-140		20	50
Benzo(ghi)perylene	84		68		40-140		21	50
Fluorene	75		62		40-140		19	50
Phenanthrene	71		59		40-140		18	50
Dibenzo(a,h)anthracene	92		75		40-140		20	50
Indeno(1,2,3-cd)pyrene	93		75		40-140		21	50
Pyrene	78		64		35-142		20	50
1-Methylnaphthalene	75		61		40-140		21	50
2-Methylnaphthalene	73		60		40-140		20	50



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-06 Batch: WG1582145-2 WG1582145-3								

Surrogate	LCS		LCSD		Acceptance Criteria	
	%Recovery	Qual	%Recovery	Qual	Qual	Criteria
Nitrobenzene-d5	81		67			23-120
2-Fluorobiphenyl	70		59			30-120
4-Terphenyl-d14	75		64			18-120



# PETROLEUM HYDROCARBONS



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 21:53  
 Analyst: MEO  
 Percent Solids: 54%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Petroleum Hydrocarbon Quantitation - Westborough Lab						
--	--	--	--	--	--	--

TPH (C10-C36)	ND		ug/kg	59900	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	76		40-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 22:43  
 Analyst: MEO  
 Percent Solids: 39%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	84000	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			75		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 21:04  
 Analyst: MEO  
 Percent Solids: 42%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Petroleum Hydrocarbon Quantitation - Westborough Lab						
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TPH (C10-C36)	ND		ug/kg	76600	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	76		40-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 21:29  
 Analyst: MEO  
 Percent Solids: 39%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	85900	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			59		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 21:53  
 Analyst: MEO  
 Percent Solids: 50%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH (C10-C36)	ND		ug/kg	62800	--	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
o-Terphenyl			59		40-140	

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-06  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8015D(M)  
 Analytical Date: 12/12/21 22:18  
 Analyst: MEO  
 Percent Solids: 55%

Extraction Method: EPA 3546  
 Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Petroleum Hydrocarbon Quantitation - Westborough Lab						
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TPH (C10-C36)	185000		ug/kg	57500	--	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	58		40-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015D(M)  
Analytical Date: 12/12/21 21:29  
Analyst: MEO

Extraction Method: EPA 3546  
Extraction Date: 12/11/21 12:54

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 01-06 Batch: WG1582113-1					
TPH (C10-C36)	ND		ug/kg	32600	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	77		40-140

### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-06 Batch: WG1582113-2								
TPH (C10-C36)	90		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
o-Terphenyl	78				40-140





## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1582113-3 QC Sample: L2165736-01 Client ID: 2101333-SD102(0-4")						
TPH (C10-C36)	ND	ND	ug/kg	NC		40

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	76		73		40-140



# PCBS

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-01  
 Client ID: 2101333-SD102(0-4")  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 12:30  
 Date Received: 12/01/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/13/21 21:39  
 Analyst: CW  
 Percent Solids: 54%

Extraction Method: EPA 3540C  
 Extraction Date: 12/12/21 13:40  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/13/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>							
Aroclor 1016	ND		ug/kg	36.1	--	1	A
Aroclor 1221	ND		ug/kg	36.1	--	1	A
Aroclor 1232	ND		ug/kg	36.1	--	1	A
Aroclor 1242	ND		ug/kg	36.1	--	1	A
Aroclor 1248	ND		ug/kg	24.1	--	1	A
Aroclor 1254	ND		ug/kg	36.1	--	1	A
Aroclor 1260	ND		ug/kg	24.1	--	1	A
Aroclor 1262	ND		ug/kg	12.0	--	1	A
Aroclor 1268	ND		ug/kg	12.0	--	1	A
PCBs, Total	ND		ug/kg	12.0	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	71		30-150	B
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	68		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-02  
 Client ID: 2101333-SD103(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:00  
 Date Received: 12/01/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/13/21 21:49  
 Analyst: CW  
 Percent Solids: 39%

Extraction Method: EPA 3540C  
 Extraction Date: 12/12/21 13:40  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/13/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	50.1	--	1	A
Aroclor 1221	ND		ug/kg	50.1	--	1	A
Aroclor 1232	ND		ug/kg	50.1	--	1	A
Aroclor 1242	ND		ug/kg	50.1	--	1	A
Aroclor 1248	ND		ug/kg	33.4	--	1	A
Aroclor 1254	ND		ug/kg	50.1	--	1	A
Aroclor 1260	ND		ug/kg	33.4	--	1	A
Aroclor 1262	ND		ug/kg	16.7	--	1	A
Aroclor 1268	ND		ug/kg	16.7	--	1	A
PCBs, Total	ND		ug/kg	16.7	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	76		30-150	B
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	75		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-03  
 Client ID: 2101333-SD105(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 14:10  
 Date Received: 12/01/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/13/21 21:58  
 Analyst: CW  
 Percent Solids: 42%

Extraction Method: EPA 3540C  
 Extraction Date: 12/12/21 13:40  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/13/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	47.6	--	1	A
Aroclor 1221	ND		ug/kg	47.6	--	1	A
Aroclor 1232	ND		ug/kg	47.6	--	1	A
Aroclor 1242	ND		ug/kg	47.6	--	1	A
Aroclor 1248	ND		ug/kg	31.8	--	1	A
Aroclor 1254	ND		ug/kg	47.6	--	1	A
Aroclor 1260	ND		ug/kg	31.8	--	1	A
Aroclor 1262	ND		ug/kg	15.9	--	1	A
Aroclor 1268	ND		ug/kg	15.9	--	1	A
PCBs, Total	ND		ug/kg	15.9	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	69		30-150	B
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	66		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/13/21 22:07  
 Analyst: CW  
 Percent Solids: 39%

Extraction Method: EPA 3540C  
 Extraction Date: 12/12/21 13:40  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/13/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	51.9	--	1	A
Aroclor 1221	ND		ug/kg	51.9	--	1	A
Aroclor 1232	ND		ug/kg	51.9	--	1	A
Aroclor 1242	ND		ug/kg	51.9	--	1	A
Aroclor 1248	ND		ug/kg	34.6	--	1	A
Aroclor 1254	ND		ug/kg	51.9	--	1	A
Aroclor 1260	ND		ug/kg	34.6	--	1	A
Aroclor 1262	ND		ug/kg	17.3	--	1	A
Aroclor 1268	ND		ug/kg	17.3	--	1	A
PCBs, Total	ND		ug/kg	17.3	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	66		30-150	B
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	66		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-05  
 Client ID: 2101333-SD110(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 13:20  
 Date Received: 12/01/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 12/13/21 22:17  
 Analyst: CW  
 Percent Solids: 50%

Extraction Method: EPA 3540C  
 Extraction Date: 12/12/21 13:40  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/13/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	39.0	--	1	A
Aroclor 1221	ND		ug/kg	39.0	--	1	A
Aroclor 1232	ND		ug/kg	39.0	--	1	A
Aroclor 1242	ND		ug/kg	39.0	--	1	A
Aroclor 1248	ND		ug/kg	26.0	--	1	A
Aroclor 1254	ND		ug/kg	39.0	--	1	A
Aroclor 1260	ND		ug/kg	26.0	--	1	A
Aroclor 1262	ND		ug/kg	13.0	--	1	A
Aroclor 1268	ND		ug/kg	13.0	--	1	A
PCBs, Total	ND		ug/kg	13.0	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	69		30-150	B
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	65		30-150	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165736-06  
**Client ID:** 2101333-SD111(0-3.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 15:05  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 12/13/21 22:26  
**Analyst:** CW  
**Percent Solids:** 55%

**Extraction Method:** EPA 3540C  
**Extraction Date:** 12/12/21 13:40  
**Cleanup Method:** EPA 3665A  
**Cleanup Date:** 12/13/21  
**Cleanup Method:** EPA 3660B  
**Cleanup Date:** 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>							
Aroclor 1016	ND		ug/kg	34.6	--	1	A
Aroclor 1221	ND		ug/kg	34.6	--	1	A
Aroclor 1232	ND		ug/kg	34.6	--	1	A
Aroclor 1242	ND		ug/kg	34.6	--	1	A
Aroclor 1248	ND		ug/kg	23.1	--	1	A
Aroclor 1254	ND		ug/kg	34.6	--	1	A
Aroclor 1260	ND		ug/kg	23.1	--	1	A
Aroclor 1262	ND		ug/kg	11.5	--	1	A
Aroclor 1268	ND		ug/kg	11.5	--	1	A
PCBs, Total	ND		ug/kg	11.5	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	72		30-150	B
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	72		30-150	A



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8082A  
Analytical Date: 12/13/21 21:12  
Analyst: CW

Extraction Method: EPA 3540C  
Extraction Date: 12/12/21 13:40  
Cleanup Method: EPA 3665A  
Cleanup Date: 12/13/21  
Cleanup Method: EPA 3660B  
Cleanup Date: 12/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-06 Batch: WG1582279-1						
Aroclor 1016	ND		ug/kg	19.8	--	A
Aroclor 1221	ND		ug/kg	19.8	--	A
Aroclor 1232	ND		ug/kg	19.8	--	A
Aroclor 1242	ND		ug/kg	19.8	--	A
Aroclor 1248	ND		ug/kg	13.2	--	A
Aroclor 1254	ND		ug/kg	19.8	--	A
Aroclor 1260	ND		ug/kg	13.2	--	A
Aroclor 1262	ND		ug/kg	6.59	--	A
Aroclor 1268	ND		ug/kg	6.59	--	A
PCBs, Total	ND		ug/kg	6.59	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	70		30-150	B
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	70		30-150	A

### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG1582279-2 WG1582279-3									
Aroclor 1016	73		75		40-140	3		50	A
Aroclor 1260	70		72		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		75		30-150	B
Decachlorobiphenyl	70		72		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		74		30-150	A
Decachlorobiphenyl	69		71		30-150	A



## METALS

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-01

Date Collected: 11/30/21 12:30

Client ID: 2101333-SD102(0-4")

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 54%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	14.6		mg/kg	0.702	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Barium, Total	80.8		mg/kg	0.702	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Cadmium, Total	ND		mg/kg	0.702	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Chromium, Total	31.9		mg/kg	0.702	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Lead, Total	45.4		mg/kg	3.51	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Mercury, Total	ND		mg/kg	0.119	--	1	12/09/21 12:46	12/09/21 16:28	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.40	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	0.702	--	1	12/09/21 12:49	12/12/21 19:40	EPA 3050B	1,6010D	DL



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-02

Date Collected: 11/30/21 11:00

Client ID: 2101333-SD103(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 39%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	29.1		mg/kg	1.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Barium, Total	118		mg/kg	1.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Cadmium, Total	1.03		mg/kg	1.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Chromium, Total	51.4		mg/kg	1.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Lead, Total	172		mg/kg	5.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Mercury, Total	0.344		mg/kg	0.180	--	1	12/09/21 12:46	12/09/21 16:41	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	2.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	1.00	--	1	12/09/21 12:49	12/12/21 19:45	EPA 3050B	1,6010D	DL



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-03

Date Collected: 11/30/21 14:10

Client ID: 2101333-SD105(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 42%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	47.1		mg/kg	0.935	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Barium, Total	107		mg/kg	0.935	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Cadmium, Total	1.20		mg/kg	0.935	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Chromium, Total	49.0		mg/kg	0.935	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Lead, Total	359		mg/kg	4.68	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Mercury, Total	0.724		mg/kg	0.156	--	1	12/09/21 12:46	12/09/21 16:44	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.87	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	0.935	--	1	12/09/21 12:49	12/12/21 19:50	EPA 3050B	1,6010D	DL



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-04

Date Collected: 11/30/21 11:50

Client ID: 2101333-SD107(0-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 39%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	36.0		mg/kg	1.02	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Barium, Total	122		mg/kg	1.02	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Cadmium, Total	1.03		mg/kg	1.02	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Chromium, Total	56.6		mg/kg	1.02	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Lead, Total	301		mg/kg	5.10	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Mercury, Total	1.25		mg/kg	0.164	--	1	12/09/21 12:46	12/09/21 16:48	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	2.04	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	1.02	--	1	12/09/21 12:49	12/12/21 19:56	EPA 3050B	1,6010D	DL



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-05

Date Collected: 11/30/21 13:20

Client ID: 2101333-SD110(0-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 50%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	17.9		mg/kg	0.792	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Barium, Total	84.8		mg/kg	0.792	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Cadmium, Total	ND		mg/kg	0.792	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Chromium, Total	34.3		mg/kg	0.792	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Lead, Total	96.5		mg/kg	3.96	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Mercury, Total	0.293		mg/kg	0.152	--	1	12/09/21 12:46	12/09/21 16:51	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.58	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	0.792	--	1	12/09/21 12:49	12/12/21 20:01	EPA 3050B	1,6010D	DL





**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-06

Date Collected: 11/30/21 15:05

Client ID: 2101333-SD111(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 55%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Arsenic, Total	46.2		mg/kg	0.720	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Barium, Total	87.3		mg/kg	0.720	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Cadmium, Total	1.16		mg/kg	0.720	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Chromium, Total	33.6		mg/kg	0.720	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Lead, Total	374		mg/kg	3.60	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Mercury, Total	0.414		mg/kg	0.132	--	1	12/09/21 12:46	12/09/21 16:54	EPA 7471B	1,7471B	AC
Selenium, Total	ND		mg/kg	1.44	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL
Silver, Total	ND		mg/kg	0.720	--	1	12/09/21 12:49	12/12/21 20:41	EPA 3050B	1,6010D	DL



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-06 Batch: WG1580835-1									
Arsenic, Total	ND	mg/kg	0.400	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Barium, Total	ND	mg/kg	0.400	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Cadmium, Total	ND	mg/kg	0.400	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Chromium, Total	ND	mg/kg	0.400	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Lead, Total	ND	mg/kg	2.00	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Selenium, Total	ND	mg/kg	0.800	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL
Silver, Total	ND	mg/kg	0.400	--	1	12/09/21 12:49	12/12/21 18:43	1,6010D	DL

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-06 Batch: WG1580837-1									
Mercury, Total	ND	mg/kg	0.083	--	1	12/09/21 12:46	12/09/21 16:15	1,7471B	AC

### Prep Information

Digestion Method: EPA 7471B

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Qual			
<b>Total Metals - Mansfield Lab Associated sample(s): 01-06 Batch: WG1580835-2 SRM Lot Number: D109-540</b>									
Arsenic, Total	99	-	-	-	70-130	-	-	-	-
Barium, Total	94	-	-	-	75-125	-	-	-	-
Cadmium, Total	100	-	-	-	75-125	-	-	-	-
Chromium, Total	96	-	-	-	70-130	-	-	-	-
Lead, Total	96	-	-	-	72-128	-	-	-	-
Selenium, Total	98	-	-	-	68-132	-	-	-	-
Silver, Total	97	-	-	-	68-131	-	-	-	-
<b>Total Metals - Mansfield Lab Associated sample(s): 01-06 Batch: WG1580837-2 SRM Lot Number: D109-540</b>									
Mercury, Total	122	-	-	-	60-140	-	-	-	-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	MSD Recovery Limits	RPD Qual	RPD Limits	RPD Qual Limits
<b>Total Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1580835-3 WG1580835-4 QC Sample: L2165811-03 Client ID: MS Sample</b>											
Arsenic, Total	4.44	10.4	11.4	67	Q	11.3	68	Q	75-125	1	20
Barium, Total	65.3	174	181	66	Q	187	72	Q	75-125	3	20
Cadmium, Total	0.574	4.61	3.15	56	Q	3.06	56	Q	75-125	3	20
Chromium, Total	13.0	17.4	23.9	63	Q	24.0	65	Q	75-125	0	20
Lead, Total	77.1	46.1	106	63	Q	112	78	Q	75-125	6	20
Selenium, Total	ND	10.4	6.96	67	Q	6.77	67	Q	75-125	3	20
Silver, Total	ND	26.1	22.1	85		21.2	84		75-125	4	20

<b>Total Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1580837-3 QC Sample: L2165736-01 Client ID: 2101333-SD102(0-4")</b>											
Mercury, Total	ND	0.283	0.334	118		-	-		80-120	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2165736

**Project Number:** 2101333

**Report Date:** 12/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1580837-4 QC Sample: L2165736-01 Client ID: 2101333-SD102(0-4")						
Mercury, Total	ND	ND	mg/kg	NC		20



**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2165736

**Project Number:** 2101333

**Report Date:** 12/15/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-06	QC Batch ID: WG1580835-6	QC Sample: L2165811-03	Client ID: DUP Sample			
Lead, Total	77.1	99.3	mg/kg	29	Q	20



# **INORGANICS & MISCELLANEOUS**

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

## SAMPLE RESULTS

Lab ID: L2165736-01

Date Collected: 11/30/21 12:30

Client ID: 2101333-SD102(0-4")

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	53.8		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165736-02  
**Client ID:** 2101333-SD103(0-3.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 11:00  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	39.0		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165736**Project Number:** 2101333**Report Date:** 12/15/21**SAMPLE RESULTS**

Lab ID: L2165736-03

Date Collected: 11/30/21 14:10

Client ID: 2101333-SD105(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	41.5		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-04  
 Client ID: 2101333-SD107(0-3')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 11:50  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	38.5		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

## SAMPLE RESULTS

Lab ID: L2165736-05

Date Collected: 11/30/21 13:20

Client ID: 2101333-SD110(0-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	50.4		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165736-06  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	54.8		%	0.100	NA	1	-	12/02/21 09:16	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2165736

**Project Number:** 2101333

**Report Date:** 12/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1578097-1 QC Sample: L2165736-01 Client ID: 2101333-SD102(0-4")						
Solids, Total	53.8	53.2	%	1		20



Serial\_No:12152113:28  
 Lab Number: L2165736  
 Report Date: 12/15/21

Project Name: NEWBURYPORT FROG POND  
 Project Number: 2101333

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**  
**Cooler** A  
**Custody Seal** Absent

<b>Container Information</b>		<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2165736-01A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-01B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-01C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-01D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-01E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		BA-Tl(180), TCLPRELOG(), AS-Tl(180), AG-Tl(180), CR-Tl(180), SE-Tl(180), PB-Tl(180), HG-T(28), CD-Tl(180)
L2165736-01F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14), TPH-DRO-D(14), PCB-8082LL-3540C(365)
L2165736-02A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent		8260HLW(14)
L2165736-02B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-02C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-02D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-02E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TCLPRELOG(), BA-Tl(180), AS-Tl(180), AG-Tl(180), CR-Tl(180), SE-Tl(180), PB-Tl(180), HG-T(28), CD-Tl(180)
L2165736-02F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14), TPH-DRO-D(14), PCB-8082LL-3540C(365)
L2165736-03A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent		8260HLW(14)
L2165736-03B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-03C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-03D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-03E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TCLPRELOG(), AS-Tl(180), BA-Tl(180), AG-Tl(180), CR-Tl(180), SE-Tl(180), PB-Tl(180), HG-T(28), CD-Tl(180)
L2165736-03F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14), TPH-DRO-D(14), PCB-8082LL-3540C(365)
L2165736-04A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent		8260HLW(14)

\*Values in parentheses indicate holding time in days



Serial\_No:12152113:28

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165736

Project Number: 2101333

Report Date: 12/15/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165736-04B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-04C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-04D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-04E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TCLPRELOG(),AS-Tl(180),BA-Tl(180),AG-Tl(180),CR-Tl(180),PB-Tl(180),SE-Tl(180),HG-T(28),CD-Tl(180)
L2165736-04F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165736-05A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent		8260HLW(14)
L2165736-05B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-05C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-05D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-05E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		AS-Tl(180),BA-Tl(180),TCLPRELOG(),AG-Tl(180),CR-Tl(180),SE-Tl(180),PB-Tl(180),HG-T(28),CD-Tl(180)
L2165736-05F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)
L2165736-06A	Vial MeOH preserved	A	NA	5.4	5.4	Y	Absent		8260HLW(14)
L2165736-06B	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-06C	Vial water preserved	A	NA	5.4	5.4	Y	Absent	02-DEC-21 07:28	8260HLW(14)
L2165736-06D	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165736-06E	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		AS-Tl(180),BA-Tl(180),TCLPRELOG(),AG-Tl(180),CR-Tl(180),PB-Tl(180),SE-Tl(180),HG-T(28),CD-Tl(180)
L2165736-06F	Glass 500ml/16oz unpreserved	A	NA	5.4	5.4	Y	Absent		PAHTCL-SIM(14),TPH-DRO-D(14),PCB-8082LL-3540C(365)

\*Values in parentheses indicate holding time in days





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

#### Footnotes

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

#### Terms

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

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

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

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

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

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

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

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

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

#### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

#### Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165736  
**Report Date:** 12/15/21

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

<b>Chain-of-Custody Record</b>		<b>Laboratory:</b> Alpha Analytical	<b>Laboratory Job #</b> L2165736								
<b>Project Name:</b> Newburyport Frog Pond		<b>Project Location:</b> Newburyport, MA									
<b>Project Number:</b> 2101333		<b>Project Manager:</b> Krista Wolfe									
<b>Send Report to:</b> Krista Wolfe labdata@geiconsultants.com		<b>781-424-9909 kwolfe@geiconsultants.com</b>									
<b>MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED:</b>		<b>Analysis</b>									
STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS		Preservative									
State/Federal Program: MA #01WQC Other NH RI CT NY ME		None None None									
MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.		MeOH &H2O									
YES NO		Samples Field Filtered YES NO NA									
YES NO		Sampled Shipped With Ice YES NO									
Sample Specific Remarks		Sample Specific Remarks									
Lab Sample Number	GEI Sample ID	Date	Time	Matrix	No. of Bottles	Sampler(s) Initials	Metals if necessary PAH, TPH, PCB, TCLP	RCRA & Metals*	% Solids	VOC	Sample Handling
65736-01	2101333-SD102(0-4')	11/30/2021	1230	SD	6	CWS	X	X	X	X	YES
-02	2101333-SD103(0-3.5')	11/30/2021	1100	SD	6	CWS	X	X	X	X	NO
-03	2101333-SD105(0-3.5')	11/30/2021	1410	SD	6	CWS	X	X	X	X	NO
-04	2101333-SD107(0-3')	11/30/2021	1150	SD	6	CWS	X	X	X	X	NO
-05	2101333-SD110(0-3')	11/30/2021	1320	SD	6	CWS	X	X	X	X	NO
-06	2101333-SD111(0-3.5')	11/30/2021	1505	SD	6	CWS	X	X	X	X	NO
<b>Relinquished by sampler: (signature)</b>											
1. <i>[Signature]</i>											
<b>Relinquished by sampler: (signature)</b>											
2. GEI Sample Fridge											
<b>Relinquished by: (signature)</b>											
3. <i>[Signature]</i>											
<b>Relinquished by: (signature)</b>											
4. <i>[Signature]</i>											
<b>Relinquished by: (signature)</b>											
5. <i>[Signature]</i>											
<b>Turnaround Time (Business days):</b>											
5-Day <input checked="" type="checkbox"/> 4-Day <input type="checkbox"/> 3-Day <input type="checkbox"/>											
2-Day <input type="checkbox"/> 1-Day <input type="checkbox"/> Other <input type="checkbox"/>											
<b>Additional Requirements/Comments/Remarks:</b>											
*TCLP when >20x rule											
Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.											



## ANALYTICAL REPORT

Lab Number:	L2165741
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	01/04/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165741-01	2101333-SD102(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 12:10	12/01/21
L2165741-02	2101333-SD102(1.2-5')	SOIL	NEWBURYPORT, MA	11/30/21 12:15	12/01/21
L2165741-03	2101333-SD102(2.5-4')	SOIL	NEWBURYPORT, MA	11/30/21 12:20	12/01/21
L2165741-04	2101333-SD103(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 10:30	12/01/21
L2165741-05	2101333-SD103(1-2')	SOIL	NEWBURYPORT, MA	11/30/21 10:35	12/01/21
L2165741-06	2101333-SD103(2-3')	SOIL	NEWBURYPORT, MA	11/30/21 10:40	12/01/21
L2165741-07	2101333-SD103(3.5-5')	SOIL	NEWBURYPORT, MA	11/30/21 10:45	12/01/21
L2165741-08	2101333-SD103(5.5-7')	SOIL	NEWBURYPORT, MA	11/30/21 10:50	12/01/21
L2165741-09	2101333-SD105(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 13:40	12/01/21
L2165741-10	2101333-SD105(1-2')	SOIL	NEWBURYPORT, MA	11/30/21 13:45	12/01/21
L2165741-11	2101333-SD105(2-3')	SOIL	NEWBURYPORT, MA	11/30/21 13:50	12/01/21
L2165741-12	2101333-SD105(3.5-5')	SOIL	NEWBURYPORT, MA	11/30/21 13:55	12/01/21
L2165741-13	2101333-SD105(5-6.5')	SOIL	NEWBURYPORT, MA	11/30/21 14:00	12/01/21
L2165741-14	2101333-SD107(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 11:20	12/01/21
L2165741-15	2101333-SD107(1-2')	SOIL	NEWBURYPORT, MA	11/30/21 11:25	12/01/21
L2165741-16	2101333-SD107(2-3')	SOIL	NEWBURYPORT, MA	11/30/21 11:30	12/01/21
L2165741-17	2101333-SD107(3-5.5')	SOIL	NEWBURYPORT, MA	11/30/21 11:35	12/01/21
L2165741-18	2101333-SD107(5.5-8')	SOIL	NEWBURYPORT, MA	11/30/21 11:40	12/01/21
L2165741-19	2101333-SD110(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 12:45	12/01/21
L2165741-20	2101333-SD110(1.2-5)	SOIL	NEWBURYPORT, MA	11/30/21 12:50	12/01/21
L2165741-21	2101333-SD110(2.5-4')	SOIL	NEWBURYPORT, MA	11/30/21 12:55	12/01/21
L2165741-22	2101333-SD110(4-6')	SOIL	NEWBURYPORT, MA	11/30/21 13:00	12/01/21
L2165741-23	2101333-SD110(6-8')	SOIL	NEWBURYPORT, MA	11/30/21 13:05	12/01/21
L2165741-24	2101333-SD110(8-8.5)	SOIL	NEWBURYPORT, MA	11/30/21 13:10	12/01/21



Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165741-25	2101333-SD111(0-1')	SOIL	NEWBURYPORT, MA	11/30/21 14:35	12/01/21
L2165741-26	2101333-SD111(1-3')	SOIL	NEWBURYPORT, MA	11/30/21 14:40	12/01/21
L2165741-27	2101333-SD111(3-5')	SOIL	NEWBURYPORT, MA	11/30/21 14:45	12/01/21
L2165741-28	2101333-SD111(5-6')	SOIL	NEWBURYPORT, MA	11/30/21 14:50	12/01/21
L2165741-29	2101333-SD111(6-7')	SOIL	NEWBURYPORT, MA	11/30/21 14:55	12/01/21

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

### Case Narrative

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

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

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

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

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

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

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**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

### Case Narrative (continued)

#### Report Revision

January 04, 2022: The Client ID was amended on L2165741-13.

#### Phosphorus, Total

The WG1581612-4 Laboratory Duplicate RPD for phosphorus, total (29%), performed on L2165741-14, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 01/04/22

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-01

Date Collected: 11/30/21 12:10

Client ID: 2101333-SD102(0-1')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	53.0		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1000		mg/kg	43	--	4.6	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-02

Date Collected: 11/30/21 12:15

Client ID: 2101333-SD102(1.2-5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	50.4		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1800		mg/kg	46	--	4.6	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-03  
**Client ID:** 2101333-SD102(2.5-4')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 12:20  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	45.8		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	2000		mg/kg	52	--	4.8	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-04

Date Collected: 11/30/21 10:30

Client ID: 2101333-SD103(0-1')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	32.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	2000		mg/kg	74	--	4.8	-	12/10/21 09:30	121,4500P-E	SD





Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

## SAMPLE RESULTS

Lab ID: L2165741-05

Date Collected: 11/30/21 10:35

Client ID: 2101333-SD103(1-2')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	40.3		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1900		mg/kg	54	--	4.4	-	12/10/21 09:30	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

## SAMPLE RESULTS

Lab ID: L2165741-06

Date Collected: 11/30/21 10:40

Client ID: 2101333-SD103(2-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	47.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	2000		mg/kg	47	--	4.4	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-07  
**Client ID:** 2101333-SD103(3.5-5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 10:45  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	22.0		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	630		mg/kg	110	--	4.7	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-08  
**Client ID:** 2101333-SD103(5.5-7')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 10:50  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	12.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1100		mg/kg	200	--	4.8	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-09  
**Client ID:** 2101333-SD105(0-1')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 13:40  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	34.1		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1900		mg/kg	69	--	4.7	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-10

Date Collected: 11/30/21 13:45

Client ID: 2101333-SD105(1-2')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	43.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1500		mg/kg	54	--	4.7	-	12/10/21 09:30	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

## SAMPLE RESULTS

Lab ID: L2165741-11

Date Collected: 11/30/21 13:50

Client ID: 2101333-SD105(2-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	51.0		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1600		mg/kg	44	--	4.5	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-12  
**Client ID:** 2101333-SD105(3.5-5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 13:55  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	16.0		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	640		mg/kg	75	--	2.4	-	12/10/21 09:30	121,4500P-E	SD





**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-13

Date Collected: 11/30/21 14:00

Client ID: 2101333-SD105(5-6.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	67.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	970		mg/kg	72	--	9.7	-	12/10/21 09:30	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-14

Date Collected: 11/30/21 11:20

Client ID: 2101333-SD107(0-1')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	31.2		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1200		mg/kg	88	--	5.5	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-15  
**Client ID:** 2101333-SD107(1-2')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 11:25  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	39.7		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1800		mg/kg	54	--	4.3	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-16  
**Client ID:** 2101333-SD107(2-3')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 11:30  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	44.4		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	2200		mg/kg	50	--	4.4	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-17  
**Client ID:** 2101333-SD107(3-5.5')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 11:35  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	15.8		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1500		mg/kg	150	--	4.8	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-18  
**Client ID:** 2101333-SD107(5.5-8')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 11:40  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	15.1		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	920		mg/kg	140	--	4.4	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-19  
**Client ID:** 2101333-SD110(0-1')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 12:45  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	51.6		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	800		mg/kg	44	--	4.6	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-20

Date Collected: 11/30/21 12:50

Client ID: 2101333-SD110(1.2-5)

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	56.3		%	0.100	NA	1	-	12/02/21 09:27	121,2540G	RI
Phosphorus, Total	1400		mg/kg	39	--	4.4	-	12/13/21 08:15	121,4500P-E	SD





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-21  
**Client ID:** 2101333-SD110(2.5-4')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 12:55  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	40.6		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	2000		mg/kg	62	--	5	-	12/13/21 08:15	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

## SAMPLE RESULTS

Lab ID: L2165741-22

Date Collected: 11/30/21 13:00

Client ID: 2101333-SD110(4-6')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	15.9		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	450		mg/kg	85	--	2.7	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-23  
**Client ID:** 2101333-SD110(6-8')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 13:05  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	14.9		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	240		mg/kg	77	--	2.3	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-24  
**Client ID:** 2101333-SD110(8-8.5)  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 13:10  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	63.7		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	560		mg/kg	33	--	4.2	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-25

Date Collected: 11/30/21 14:35

Client ID: 2101333-SD111(0-1')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	56.4		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	650		mg/kg	40	--	4.5	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-26  
**Client ID:** 2101333-SD111(1-3')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 14:40  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	53.0		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	1700		mg/kg	46	--	4.9	-	12/13/21 08:15	121,4500P-E	SD



**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165741**Project Number:** 2101333**Report Date:** 01/04/22**SAMPLE RESULTS**

Lab ID: L2165741-27

Date Collected: 11/30/21 14:45

Client ID: 2101333-SD111(3-5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	57.9		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	1100		mg/kg	46	--	5.3	-	12/13/21 08:15	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

## SAMPLE RESULTS

Lab ID: L2165741-28

Date Collected: 11/30/21 14:50

Client ID: 2101333-SD111(5-6')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	20.3		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	280		mg/kg	120	--	4.9	-	12/13/21 08:15	121,4500P-E	SD





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

**SAMPLE RESULTS**

**Lab ID:** L2165741-29  
**Client ID:** 2101333-SD111(6-7')  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 14:55  
**Date Received:** 12/01/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	16.2		%	0.100	NA	1	-	12/02/21 09:45	121,2540G	RI
Phosphorus, Total	240		mg/kg	77	--	2.5	-	12/13/21 08:15	121,4500P-E	SD



Project Name: NEWBURYPORT FROG POND

Lab Number: L2165741

Project Number: 2101333

Report Date: 01/04/22

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-13 Batch: WG1581252-1									
Phosphorus, Total	ND	mg/kg	4.5	--	.9	-	12/10/21 09:30	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 14-29 Batch: WG1581612-1									
Phosphorus, Total	ND	mg/kg	4.5	--	.9	-	12/13/21 08:15	121,4500P-E	SD

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

Parameter	LCS		LCSD		%Recovery Limits		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	%Recovery	Qual			
General Chemistry - Westborough Lab Associated sample(s): 01-13 Batch: WG1581252-2									
Phosphorus, Total	108		-		52-148		-		20
General Chemistry - Westborough Lab Associated sample(s): 14-29 Batch: WG1581612-2									
Phosphorus, Total	113		-		52-148		-		20



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-13 QC Batch ID: WG1581252-3 QC Sample: L2165447-18 Client ID: MS Sample											
Phosphorus, Total	1900	413	2200	73	Q	-	-	-	75-125	-	20
General Chemistry - Westborough Lab Associated sample(s): 14-29 QC Batch ID: WG1581612-3 QC Sample: L2165741-14 Client ID: 2101333-SD107(0-1')											
Phosphorus, Total	1200	679	1800	88	-	-	-	-	75-125	-	20



## Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165741  
**Report Date:** 01/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): SD102(0-1')	01-20	QC Batch ID: WG1578124-1	QC Sample: L2165741-01	Client ID: 2101333-		
Solids, Total	53.0	53.5	%	1		20
General Chemistry - Westborough Lab Associated sample(s): SD110(2.5-4')	21-29	QC Batch ID: WG1578125-1	QC Sample: L2165741-21	Client ID: 2101333-		
Solids, Total	40.6	39.6	%	2		20
General Chemistry - Westborough Lab Associated sample(s):	01-13	QC Batch ID: WG1581252-4	QC Sample: L2165447-18	Client ID: DUP Sample		
Phosphorus, Total	1900	2000	mg/kg	5		20
General Chemistry - Westborough Lab Associated sample(s): SD107(0-1')	14-29	QC Batch ID: WG1581612-4	QC Sample: L2165741-14	Client ID: 2101333-		
Phosphorus, Total	1200	1600	mg/kg	29	Q	20



**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**  
**Cooler** A  
**Custody Seal** Absent

<b>Container Information</b>		<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2165741-01A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-01B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-02A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-02B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-03A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-03B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-04A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-04B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-05A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-05B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-06A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-06B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-07A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-07B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-08A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-08B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-09A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-09B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-10A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-10B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-11A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)
L2165741-11B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	Absent		TPHOS-4500(28)
L2165741-12A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	Absent		TS(7)

Container Information			Initial	Final	Temp	Frozen	Analysis(*)
Container ID	Container Type	Cooler	pH	pH	deg C	Date/Time	
L2165741-12B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-13A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-13B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-14A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-14B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-15A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-15B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-16A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-16B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-17A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-17B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-18A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-18B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-19A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-19B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-20A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-20B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-21A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-21B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-22A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-22B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-23A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-23B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-24A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-24B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-25A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)
L2165741-25B	Glass 60mL/2oz unpreserved	A	NA	5.4	Y	Y	TPHOS-4500(28)
L2165741-26A	Plastic 2oz unpreserved for TS	A	NA	5.4	Y	Y	TS(7)

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**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165741-26B	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TPHOS-4500(28)
L2165741-27A	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165741-27B	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TPHOS-4500(28)
L2165741-28A	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165741-28B	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TPHOS-4500(28)
L2165741-29A	Plastic 2oz unpreserved for TS	A	NA	5.4	5.4	Y	Absent		TS(7)
L2165741-29B	Glass 60mL/2oz unpreserved	A	NA	5.4	5.4	Y	Absent		TPHOS-4500(28)





**Project Name:** NEWBURYPORT FROG POND  
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**Lab Number:** L2165741  
**Report Date:** 01/04/22

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



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#### Footnotes

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

#### Terms

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

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

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

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

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

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

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

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

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

#### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
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#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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## REFERENCES

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

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

# Chain-of-Custody Record

**Laboratory Job #** 2165761 **Page 1 of 3**

**Laboratory:** Alpha Analytical **Project Location:** Newburyport, MA

**Project Name:** Newburyport Frog Pond **Project Manager:** Krista Wolfe

**Project Number:** 2101333 **781-424-9909** **kwolfe@geiconsultants.com**

**Send Report to:** Krista Wolfe **Preservative**

labdata@geiconsultants.com

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	% Solids	Total Phosphorus	Analysis		Sample Handling	Sample Specific Remarks
		Date	Time						None	None		
65761-01	2101333-SD102(0-1')	11/30/2021	1210	SD	2	CWS	X	X			YES	
02	2101333-SD102(1-2.5')	11/30/2021	1215	SD	2	CWS	X	X			NO	
03	2101333-SD102(2.5-4')	11/30/2021	1220	SD	2	CWS	X	X			NA	
04	2101333-SD103(0-1')	11/30/2021	1030	SD	2	CWS	X	X			YES	
05	2101333-SD103(1-2')	11/30/2021	1035	SD	2	CWS	X	X			NO	
06	2101333-SD103(2-3')	11/30/2021	1040	SD	2	CWS	X	X			YES	
07	2101333-SD103(3-5.5')	11/30/2021	1045	SD	2	CWS	X	X			NO	
08	2101333-SD103(5.5-7')	11/30/2021	1050	SD	2	CWS	X	X			YES	
09	2101333-SD105(0-1')	11/30/2021	1340	SD	2	CWS	X	X			NO	
10	2101333-SD105(1-2')	11/30/2021	1345	SD	2	CWS	X	X			YES	
11	2101333-SD105(2-3')	11/30/2021	1350	SD	2	CWS	X	X			NO	
12	2101333-SD105(3.5-5')	11/30/2021	1355	SD	2	CWS	X	X			YES	

**MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED:** YES NO

**STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS**

State/Federal Program: MA 401WQC Other NH RI CT NY ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Relinquished by sampler (signature)	Date	Time	Received by (signature)	Date	Time	Turnaround Time (Business days):	Additional Requirements/Comments/Remarks:
<i>Krista Wolfe</i>	11/30/21	16:00	<i>Sample Fudge</i>			5-Day <input checked="" type="checkbox"/> 4-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 1-Day <input type="checkbox"/> Other <input type="checkbox"/>	
<i>Sample Fudge</i>			<i>Calvin</i>	12/1/21	10:58		
<i>Calvin</i>			<i>Bejamin Swin</i>	12/1	10:59		
<i>Bejamin Swin</i>			<i>Sample Fudge</i>	12/1	17:07		
<i>Sample Fudge</i>			<i>Calvin</i>				

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

<b>Chain-of-Custody Record</b>		<b>Laboratory: Alpha Analytical</b>	<b>Laboratory Job #</b> <i>12265761</i>						
<b>Project Information</b>		<b>Page 2 of 3</b>							
Project Name: Newburyport Frog Pond Project Number: 2101333 Send Report to: Krista Wolfe labdata@geiconsultants.com		Project Location: Newburyport, MA Project Manager: Krista Wolfe 781-424-9909 kwolfe@geiconsultants.com							
MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: <input checked="" type="radio"/> YES <input type="radio"/> NO		Analysis							
STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS State/Federal Program: MA 401WQC Other <input type="radio"/> NH <input type="radio"/> RI <input type="radio"/> CT <input type="radio"/> NY <input type="radio"/> ME MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.		Sample Handling Samples Field Filtered: YES <input type="radio"/> NO <input checked="" type="radio"/> NA Sampled Shipped With Ice: YES <input type="radio"/> NO <input checked="" type="radio"/>							
Lab Sample Number	GEI Sample ID	Collection Date	Time	Matrix	No. of Bottles	Sampler(s) Initials	Total Phosphorus	% Solids	Sample Specific Remarks
65741-13	2101333-SD105(5-6.5')	11/30/2021	1400	SD	2	CWS	X	X	
14	2101333-SD107(0-1')	11/30/2021	1120	SD	2	CWS	X	X	
15	2101333-SD107(1-2')	11/30/2021	1125	SD	2	CWS	X	X	
16	2101333-SD107(2-3')	11/30/2021	1130	SD	2	CWS	X	X	
17	2101333-SD107(3-5.5')	11/30/2021	1135	SD	2	CWS	X	X	
18	2101333-SD107(5.5-8')	11/30/2021	1140	SD	2	CWS	X	X	
19	2101333-SD110(0-1')	11/30/2021	1245	SD	2	CWS	X	X	
20	2101333-SD110(1-2.5)	11/30/2021	1250	SD	2	CWS	X	X	
21	2101333-SD110(2.5-4')	11/30/2021	1255	SD	2	CWS	X	X	
22	2101333-SD110(4-6')	11/30/2021	1300	SD	2	CWS	X	X	
23	2101333-SD110(6-8')	11/30/2021	1305	SD	2	CWS	X	X	
24	2101333-SD110(8-8.5)	11/30/2021	1310	SD	2	CWS	X	X	
Relinquished by sampler: (signature)		Date: <i>11/30/21</i>	Time: <i>1630</i>	Received by: (signature)		<i>1. Sample Fudge</i>			
Relinquished by sampler: (signature)		Date: <i>12/1/21</i>	Time: <i>10:59</i>	Received by: (signature)		<i>2. Cebayth</i>			
Relinquished by (signature)		Date: <i>12/1</i>	Time: <i>10:59</i>	Received by: (signature)		<i>3. Benjamin Swier - AAL</i>			
Relinquished by (signature)		Date: <i>12/1</i>	Time: <i>17:07</i>	Received by: (signature)		<i>4. Benjamin Swier - AAL</i>			
Relinquished by (signature)		Date:	Time:	Received by: (signature)		<i>5.</i>			
Turnaround Time (Business days): 5-Day <input checked="" type="checkbox"/> 4-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 1-Day <input type="checkbox"/> Other <input type="checkbox"/>		Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.							
Additional Requirements/Comments/Remarks:									

# Chain-of-Custody Record

Laboratory: Alpha Analytical

Laboratory Job # 12165741



Project Name: Newburyport Frog Pond  
Project Number: 2101333  
Send Report to: Krista Wolfe  
labdata@geiconsultants.com

Project Location: Newburyport, MA  
Project Manager: Krista Wolfe  
781-424-9909 kwolfe@geiconsultants.com

Page 3 of 3

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED:  YES  NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS

State/Federal Program: MA  401WQC Other  NH  RI  CT  NY  ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Lab Sample Number	GEI Sample ID	Collection			No. of Bottles	Matrix	No. of Sampler(s) Initials	Total Phosphorus	% Solids	Analysis	Sample Handling	Sample Specific Remarks
		Date	Time	Time								
65741-25	2101333-SD111(0-1')	11/30/2021	1435		SD	2	CWS	X	X			
76	2101333-SD111(1-3')	11/30/2021	1440		SD	2	CWS	X	X			
77	2101333-SD111(3-5')	11/30/2021	1445		SD	2	CWS	X	X			
78	2101333-SD111(5-6')	11/30/2021	1450		SD	2	CWS	X	X			
79	2101333-SD111(6-7')	11/30/2021	1455		SD	2	CWS	X	X			

Relinquished by sampler (signature)	Date	Time	Received by (signature)	Time	Turnaround Time (Business days):	Additional Requirements/Comments/Remarks:
1. <i>[Signature]</i>	11/30/21	16:30	1. <i>[Signature]</i>		5-Day <input checked="" type="checkbox"/> 4-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 1-Day <input type="checkbox"/> Other <input type="checkbox"/>	
2. <i>[Signature]</i>	12/1/21	10:59	2. <i>[Signature]</i>			
3. <i>[Signature]</i>	12/1	10:59	3. <i>[Signature]</i>			
4. <i>[Signature]</i>	12/1	17:07	4. <i>[Signature]</i>			
5. <i>[Signature]</i>			5. <i>[Signature]</i>			





## ANALYTICAL REPORT

Lab Number:	L2168395
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	02/25/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2168395-01	2101333-SD101(0-3')	SOIL	NEWBURYPORT, MA	11/29/21 15:50	11/30/21
L2168395-02	2101333-SD104(0-3.5')	SOIL	NEWBURYPORT, MA	11/29/21 15:00	11/30/21
L2168395-03	2101333-SD106(0-4.5')	SOIL	NEWBURYPORT, MA	11/29/21 14:00	11/30/21
L2168395-04	2101333-SD109(0-4')	SOIL	NEWBURYPORT, MA	11/29/21 12:55	11/30/21



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

### Case Narrative

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

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

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

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

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

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

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**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

**Case Narrative (continued)**

Report Revision

February 25, 2022: The Client ID was amended on L2168395-04.

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

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 02/25/22

## METALS

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168395

**Project Number:** 2101333

**Report Date:** 02/25/22

**SAMPLE RESULTS**

Lab ID: L2168395-01

Date Collected: 11/29/21 15:50

Client ID: 2101333-SD101(0-3')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/14/21 22:06

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	1.37		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:08	EPA 3015	1,6010D	EW



**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168395

**Project Number:** 2101333

**Report Date:** 02/25/22

**SAMPLE RESULTS**

Lab ID: L2168395-02

Date Collected: 11/29/21 15:00

Client ID: 2101333-SD104(0-3.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/14/21 22:06

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 14:53	EPA 3015	1,6010D	EW



**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168395

**Project Number:** 2101333

**Report Date:** 02/25/22

**SAMPLE RESULTS**

Lab ID: L2168395-03

Date Collected: 11/29/21 14:00

Client ID: 2101333-SD106(0-4.5')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/14/21 22:06

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 14:58	EPA 3015	1,6010D	EW





**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168395

**Project Number:** 2101333

**Report Date:** 02/25/22

**SAMPLE RESULTS**

Lab ID: L2168395-04

Date Collected: 11/29/21 12:55

Client ID: 2101333-SD109(0-4')

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/14/21 22:06

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:03	EPA 3015	1,6010D	EW



Project Name: NEWBURYPORT FROG POND

Lab Number: L2168395

Project Number: 2101333

Report Date: 02/25/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-04 Batch: WG1585888-1									
Lead, TCLP	ND	mg/l	0.500	--	1	12/21/21 12:48	12/26/21 14:43	1,6010D	EW

### Prep Information

Digestion Method: EPA 3015

TCLP/SPLP Extraction Date: 12/14/21 22:06

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1585888-2								
Lead, TCLP	97	-	-	-	75-125	-	-	20



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

Parameter	Native Sample	MS Added	MS Found	%Recovery	MS Found	MSD	%Recovery	MSD	Recovery Limits	RPD	Qual	RPD	Qual	RPD	Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1585888-3 QC Sample: L2168395-01 Client ID: 2101333-SD101(0-3')															
Lead, TCLP	1.37	5.3	6.55	98	-	-	-	-	75-125	-	-	-	-	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168395

**Project Number:** 2101333

**Report Date:** 02/25/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1585888-4 QC Sample: L2168395-01 Client ID: 2101333-SD101(0-3')						
Lead, TCLP	1.37	1.33	mg/l	3		20



**Sample Receipt and Container Information**

YES

Were project specific reporting limits specified?

**Cooler Information**  
**Cooler** B  
**Custody Seal** Absent

<b>Container Information</b>		<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>						
L2168395-01F	Glass 500ml/16oz unpreserved	B	NA	2.6	Y	Absent		-
L2168395-01W	Plastic 120ml HNO3 preserved Extracts	B	NA	2.6	Y	Absent		PB-CI(180)
L2168395-01X9	Tumble Vessel	B	NA	2.6	Y	Absent		-
L2168395-02F	Glass 500ml/16oz unpreserved	B	NA	2.6	Y	Absent		-
L2168395-02W	Plastic 120ml HNO3 preserved Extracts	B	NA	2.6	Y	Absent		PB-CI(180)
L2168395-02X9	Tumble Vessel	B	NA	2.6	Y	Absent		-
L2168395-03F	Glass 500ml/16oz unpreserved	B	NA	2.6	Y	Absent		-
L2168395-03W	Plastic 120ml HNO3 preserved Extracts	B	NA	2.6	Y	Absent		PB-CI(180)
L2168395-03X9	Tumble Vessel	B	NA	2.6	Y	Absent		-
L2168395-04F	Glass 500ml/16oz unpreserved	B	NA	2.6	Y	Absent		-
L2168395-04W	Plastic 120ml HNO3 preserved Extracts	B	NA	2.6	Y	Absent		PB-CI(180)
L2168395-04X9	Tumble Vessel	B	NA	2.6	Y	Absent		-

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

### Footnotes

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

### Terms

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

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

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

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

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

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

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

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

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

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report





**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168395  
**Report Date:** 02/25/22

## REFERENCES

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

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

# Chain-of-Custody Record



Project Name: Newburyport Frog Pond  
Project Number: 2101333  
Send Report to: Krista Wolfe  
labdata@gelconsultants.com

Project Location: Newburyport, MA  
Project Manager: Krista Wolfe  
781-424-9909 kwolfe@gelconsultants.com

MCP PRESUMPTIVE CERTAINTY AND ANALYTICAL METHODS REQUIRED:  YES  NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS

State/Federal Program: MA 401WQC Other NH RI CT NY ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Laboratory: Alpha Analytical  
Laboratory Job # L2168395

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials	Metals if necessary	Analysis	Sample Handling
		Date	Time						
68395 01	2101333-572101(0-3)	11/29/21	7:55	SD	6	(WS)	As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Tl, Zn	Metals if necessary	Sampled Shipped With Ice
68395 02	2101333-572101(0-3.5)	11/29/21	1:50	SD	6	(WS)	As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Tl, Zn	Metals if necessary	Sampled Shipped With Ice
68395 03	2101333-572101(0-4.5)	11/29/21	1:40	SD	6	(WS)	As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Tl, Zn	Metals if necessary	Sampled Shipped With Ice
68395 04	2101333-572101(0-4)	11/29/21	1:55	SD	6	(WS)	As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Tl, Zn	Metals if necessary	Sampled Shipped With Ice
68395 05	2101333-572101(0-3)	11/29/21	1:50	SD	6	(WS)	As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Tl, Zn	Metals if necessary	Sampled Shipped With Ice

Retrieved by (signature)	Date	Time	Received by (signature)	Time
1. Krista Wolfe	11-30-21	10:55	1. [Signature]	DA 01 S
2. [Signature]	11-30-21	12:45	2. [Signature]	DA 01 S
3. [Signature]			3. [Signature]	
4. [Signature]			4. [Signature]	
5. [Signature]			5. [Signature]	

Turnaround Time (Business days):  
5-Day  4-Day  3-Day   
2-Day  1-Day  Other

Additional Requirements/Comments/Remarks:  
\*TCLP when >20x rule  
\*\* TCLP Lead

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.



## ANALYTICAL REPORT

Lab Number:	L2168457
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/27/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2168457-01	2101333-SD103(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 11:00	12/01/21
L2168457-02	2101333-SD105(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 14:10	12/01/21
L2168457-03	2101333-SD107(0-3')	SOIL	NEWBURYPORT, MA	11/30/21 11:50	12/01/21
L2168457-04	2101333-SD111(0-3.5')	SOIL	NEWBURYPORT, MA	11/30/21 15:05	12/01/21

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

### Case Narrative

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

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

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

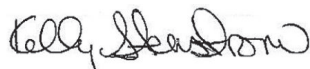
Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

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

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

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

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 12/27/21

## METALS



**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168457

**Project Number:** 2101333

**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2168457-01

Date Collected: 11/30/21 11:00

Client ID: 2101333-SD103(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/15/21 21:14

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	1.00		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:44	EPA 3015	1,6010D	EW



**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168457

**Project Number:** 2101333

**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2168457-02

Date Collected: 11/30/21 14:10

Client ID: 2101333-SD105(0-3.5')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/15/21 21:14

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	0.523		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:49	EPA 3015	1,6010D	EW



**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168457

**Project Number:** 2101333

**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2168457-03

Date Collected: 11/30/21 11:50

Client ID: 2101333-SD107(0-3')

Date Received: 12/01/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

TCLP/SPLP Ext. Date: 12/15/21 21:14

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	ND		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:54	EPA 3015	1,6010D	EW



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2168457-04  
 Client ID: 2101333-SD111(0-3.5')  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 15:05  
 Date Received: 12/01/21  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

TCLP/SPLP Ext. Date: 12/15/21 21:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Lead, TCLP	1.12		mg/l	0.500	--	1	12/21/21 12:48	12/26/21 15:59	EPA 3015	1,6010D	EW



Project Name: NEWBURYPORT FROG POND

Lab Number: L2168457

Project Number: 2101333

Report Date: 12/27/21

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-04 Batch: WG1585888-1									
Lead, TCLP	ND	mg/l	0.500	--	1	12/21/21 12:48	12/26/21 14:43	1,6010D	EW

### Prep Information

Digestion Method: EPA 3015

TCLP/SPLP Extraction Date: 12/14/21 22:06

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 Batch: WG1585888-2								
Lead, TCLP	97		-		75-125	-		20



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Recovery Limits	RPD Qual	RPD Limits
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TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1585888-3 QC Sample: L2168395-01 Client ID: MS Sample									
Lead, TCLP	1.37	5.3	6.55	98	-	-	75-125	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND

**Lab Number:** L2168457

**Project Number:** 2101333

**Report Date:** 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s):	01-04	QC Batch ID: WG1585888-4	QC Sample: L2168395-01	Client ID: DUP Sample		
Lead, TCLP	1.37	1.33	mg/l	3		20





**Sample Receipt and Container Information**

YES

Were project specific reporting limits specified?

**Cooler Information**  
**Cooler** A  
**Custody Seal** Absent

<b>Container Information</b>		<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
<b>Container ID</b>	<b>Container Type</b>							
L2168457-01A	Glass 500ml/16oz unpreserved	NA	5.4	5.4	Y	Absent		-
L2168457-01X	Plastic 120ml HNO3 preserved Extracts	NA	5.4	5.4	Y	Absent		PB-CI(180)
L2168457-01X9	Tumble Vessel	NA	5.4	5.4	Y	Absent		-
L2168457-02A	Glass 500ml/16oz unpreserved	NA	5.4	5.4	Y	Absent		-
L2168457-02X	Plastic 120ml HNO3 preserved Extracts	NA	5.4	5.4	Y	Absent		PB-CI(180)
L2168457-02X9	Tumble Vessel	NA	5.4	5.4	Y	Absent		-
L2168457-03A	Glass 500ml/16oz unpreserved	NA	5.4	5.4	Y	Absent		-
L2168457-03X	Plastic 120ml HNO3 preserved Extracts	NA	5.4	5.4	Y	Absent		PB-CI(180)
L2168457-03X9	Tumble Vessel	NA	5.4	5.4	Y	Absent		-
L2168457-04A	Glass 500ml/16oz unpreserved	NA	5.4	5.4	Y	Absent		-
L2168457-04X	Plastic 120ml HNO3 preserved Extracts	NA	5.4	5.4	Y	Absent		PB-CI(180)
L2168457-04X9	Tumble Vessel	NA	5.4	5.4	Y	Absent		-

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

#### Footnotes

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

#### Terms

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

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

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

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

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

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

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

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

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

#### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2168457  
**Report Date:** 12/27/21

## REFERENCES

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

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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

L2168457 ED 12/15/21  
L2165736

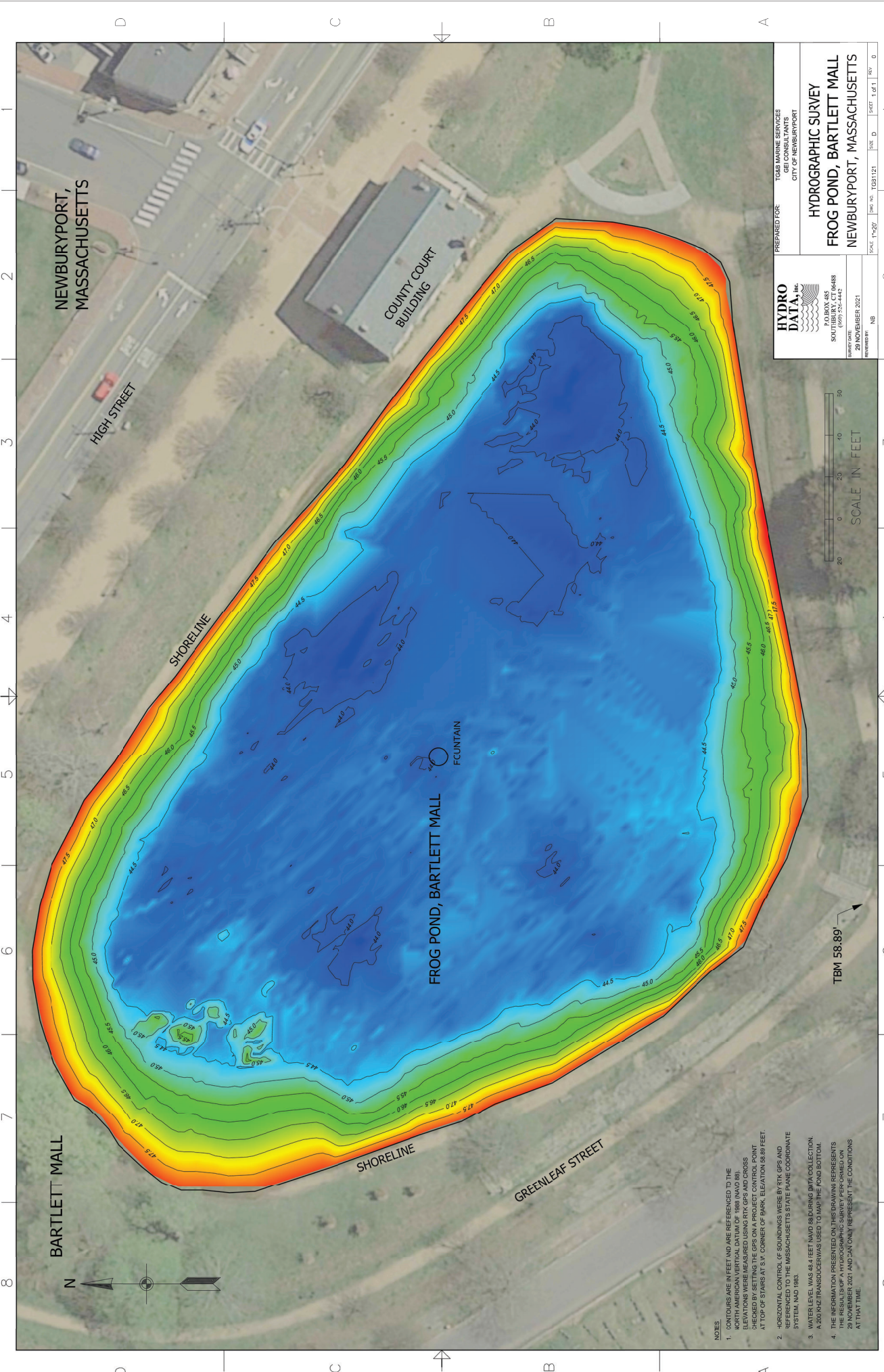
Chain-of-Custody Record				Laboratory: Alpha Analytical		Laboratory Job # L2165736		Page 1 of 1	
Project Information				Project Location: Newburyport, MA		Project Manager: Krista Wolfe		Project Number: 2101333	
Send Report to: Krista Wolfe				None		None		None	
labdata@geiconsultants.com				None		None		None	
MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: YES NO				MCP Analytical Methods		Analysis		Sample Handling	
STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS				State/Federal Program: MA 401WQC Other NH RI CT NY ME		MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.		Samples Field Filtered YES NO NA	
MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.				Collection		Analysis		Sample Handling	
Lab Sample Number	GEI Sample ID	Date	Time	Matrix	No. of Bottles	Sampler(s) Initials	PAH, TPH, PCB, PCBs, Metals if necessary	PCRB & Metals	VOCS
6573601	2101333-SD102(0-4')	11/30/2021	1230	SD	6	CWS	X	X	X
01-02	2101333-SD103(0-3.5')	11/30/2021	1100	SD	6	CWS	X	X	X
02-03	2101333-SD105(0-3.5')	11/30/2021	1410	SD	6	CWS	X	X	X
03-04	2101333-SD107(0-3')	11/30/2021	1150	SD	6	CWS	X	X	X
05	2101333-SD110(0-3')	11/30/2021	1320	SD	6	CWS	X	X	X
04-06	2101333-SD111(0-3.5')	11/30/2021	1505	SD	6	CWS	X	X	X
<p>Retinquished by sampler, (signature) Date: 11/30/21 Time: 1630 Received by (signature) 1. GEI Sample Fridge</p> <p>Retinquished by sampler, (signature) Date: 12/1/21 Time: 10:58 Received by (signature) 2. Krista Wolfe</p> <p>Retinquished by (signature) Date: 12/1 Time: 10:59 Received by (signature) 3. Krista Wolfe</p> <p>Retinquished by (signature) Date: 12/1 Time: 17:07 Received by (signature) 4. Krista Wolfe</p> <p>5.</p>									
Turnaround Time (Business days):						Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.			
5-Day <input checked="" type="checkbox"/> 4-Day _____ 3-Day _____									
2-Day _____ 1-Day _____ Other _____									
Additional Requirements/Comments/Remarks: *TCLP when >20x rule									

# Appendix D

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## Bathymetric Survey





NEWBURYPORT,  
MASSACHUSETTS

COUNTY COURT  
BUILDING

HIGH STREET

SHORELINE

FROG POND, BARTLETT MALL

FCOUNTAIN

GREENLEAF STREET

BARTLETT MALL

TBM 58.89'

SCALE IN FEET

PREPARED FOR: TEAM MARINE SERVICES  
GRE CONSULTANTS  
CITY OF NEWBURYPORT

**HYDRO  
DATA, Inc.**

P.O. BOX 845  
SOUTH NEWBURYPORT, MASS  
(603) 254-4442

DATE: 29 NOVEMBER 2021

SCALE: 1"=20'

DWG. NO.: 1031121

SHEET: 1 OF 1

REV: 0

- NOTES:
1. CONTOURS ARE IN FEET AND ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) CHECKED BY SETTING THE GPS ON A PROJECT CONTROL POINT AT TOP OF STAIRS AT S.W. CORNER OF PARK. ELEVATION 58.89 FEET.
  2. SPERICAL CONTROL POINT SOUNDINGS WERE BY RTK GPS AND WERE CHECKED TO THE MASSACHUSETTS STATE PLATE COORDINATE SYSTEM, NAD 1983.
  3. WATER LEVEL WAS 66.1 FEET NAVD 88 BY USING PPK COLLECTION. A 200 KHZ TRANSDUCER WAS USED TO MAP THE POND BOTTOM.
  4. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A HYDROGRAPHIC SURVEY PERFORMED ON 29 NOVEMBER 2021 AND CAN ONLY REPRESENT THE CONDITIONS AT THAT TIME.

Investigation Summary, Detailed Alternatives  
Evaluation, and Recommendations  
Bartlet Mall Frog Pond  
Newburyport, Massachusetts  
March 2022

# Appendix E

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## Surface Water Laboratory Data Reports



## ANALYTICAL REPORT

Lab Number:	L2165427
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/15/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165427-01	2101333-SW101A	WATER	NEWBURYPORT, MA	11/30/21 08:15	11/30/21
L2165427-02	2101333-SW101B	WATER	NEWBURYPORT, MA	11/30/21 08:30	11/30/21
L2165427-03	2101333-SW102A	WATER	NEWBURYPORT, MA	11/30/21 08:45	11/30/21
L2165427-04	2101333-SW102B	WATER	NEWBURYPORT, MA	11/30/21 09:00	11/30/21
L2165427-05	2101333-SW103A	WATER	NEWBURYPORT, MA	11/30/21 09:30	11/30/21
L2165427-06	2101333-SW103B	WATER	NEWBURYPORT, MA	11/30/21 09:45	11/30/21



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

### Case Narrative

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

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

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

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

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

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

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

Authorized Signature: *Melissa Sturgis* Melissa Sturgis

Title: Technical Director/Representative

Date: 12/15/21

# ORGANICS

# VOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-01  
 Client ID: 2101333-SW101A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 08:15  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 17:56  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab						
Chloroform	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	93		60-140
Fluorobenzene	94		60-140
4-Bromofluorobenzene	103		60-140



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-02  
 Client ID: 2101333-SW101B  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 08:30  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 18:29  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab						
Chloroform	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	91		60-140
Fluorobenzene	95		60-140
4-Bromofluorobenzene	102		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-03  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 08:45  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 19:03  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab						
Chloroform	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	93		60-140
Fluorobenzene	96		60-140
4-Bromofluorobenzene	102		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-04  
 Client ID: 2101333-SW102B  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 19:36  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab						
Chloroform	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	92		60-140
Fluorobenzene	92		60-140
4-Bromofluorobenzene	102		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-05  
 Client ID: 2101333-SW103A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:30  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 20:10  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
-----------	--------	-----------	-------	----	-----	-----------------

Volatile Organics by GC/MS - Westborough Lab						
--	--	--	--	--	--	--

Chloroform	ND		ug/l	1.0	--	1
------------	----	--	------	-----	----	---

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	94		60-140
Fluorobenzene	94		60-140
4-Bromofluorobenzene	103		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

Lab ID: L2165427-06  
 Client ID: 2101333-SW103B  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:45  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 20:44  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS - Westborough Lab						
Chloroform	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	95		60-140
Fluorobenzene	94		60-140
4-Bromofluorobenzene	102		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 128,624.1  
Analytical Date: 12/02/21 16:15  
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-06 Batch: WG1578920-4					
Chloroform	ND		ug/l	1.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	94		60-140
Fluorobenzene	95		60-140
4-Bromofluorobenzene	101		60-140

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-06 Batch: WG1578920-3								
Chloroform	100	-	-	-	70-135	-	-	54

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	97				60-140
Fluorobenzene	95				60-140
4-Bromofluorobenzene	100				60-140



# **INORGANICS & MISCELLANEOUS**



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-01  
**Client ID:** 2101333-SW101A  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 08:15  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	84		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:31	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:31	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:31	44,353.2	MR
Total Nitrogen	1.8		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.75		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:25	121,4500NH3-H	AT
Phosphorus, Total	0.088		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:07	121,4500P-E	SD
Chlorophyll A	128		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-02  
**Client ID:** 2101333-SW101B  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 08:30  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	86		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:32	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:32	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:32	44,353.2	MR
Total Nitrogen	1.8		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.75		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:26	121,4500NH3-H	AT
Phosphorus, Total	0.088		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:11	121,4500P-E	SD
Chlorophyll A	131		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-03  
**Client ID:** 2101333-SW102A  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 08:45  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	120		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:33	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:33	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:33	44,353.2	MR
Total Nitrogen	1.8		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.77		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:27	121,4500NH3-H	AT
Phosphorus, Total	0.099		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:12	121,4500P-E	SD
Chlorophyll A	144		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-04  
**Client ID:** 2101333-SW102B  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 09:00  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	86		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:35	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:35	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:35	44,353.2	MR
Total Nitrogen	1.6		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.61		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:28	121,4500NH3-H	AT
Phosphorus, Total	0.101		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:13	121,4500P-E	SD
Chlorophyll A	139		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-05  
**Client ID:** 2101333-SW103A  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 09:30  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	70		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:36	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:36	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:36	44,353.2	MR
Total Nitrogen	1.8		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.75		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:29	121,4500NH3-H	AT
Phosphorus, Total	0.098		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:14	121,4500P-E	SD
Chlorophyll A	138		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**SAMPLE RESULTS**

**Lab ID:** L2165427-06  
**Client ID:** 2101333-SW103B  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 09:45  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Microbiological Analysis - Westborough Lab</b>										
E. Coli (MF)	130		col/100ml	2.0	NA	2	-	11/30/21 16:09	121,9213D	JW
<b>General Chemistry - Westborough Lab</b>										
Nitrogen, Nitrite	ND		mg/l	0.050	--	1	-	12/01/21 09:37	44,353.2	MR
Nitrogen, Nitrate	ND		mg/l	0.10	--	1	-	12/01/21 09:37	44,353.2	MR
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	--	1	-	12/01/21 09:37	44,353.2	MR
Total Nitrogen	1.8		mg/l	0.30	--	1	-	12/15/21 09:33	107,-	JO
Nitrogen, Total Kjeldahl	1.78		mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:30	121,4500NH3-H	AT
Phosphorus, Total	0.096		mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:15	121,4500P-E	SD
Chlorophyll A	139		mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab for sample(s): 01-06 Batch: WG1577320-1									
E. Coli (MF)	ND	col/100ml	1.0	NA	1	-	11/30/21 16:09	121,9213D	JW
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1577417-1									
Chlorophyll A	ND	mg/m3	2.00	NA	1	11/30/21 21:25	12/02/21 09:10	121,10200H	MT
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1577449-1									
Nitrogen, Nitrite	ND	mg/l	0.050	--	1	-	12/01/21 08:41	44,353.2	MR
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1577450-1									
Nitrogen, Nitrate	ND	mg/l	0.10	--	1	-	12/01/21 08:34	44,353.2	MR
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1580546-1									
Phosphorus, Total	ND	mg/l	0.010	--	1	12/08/21 11:00	12/08/21 15:01	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1582645-1									
Nitrogen, Total Kjeldahl	ND	mg/l	0.300	--	1	12/13/21 16:00	12/14/21 18:04	121,4500NH3-H	AT
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG1582821-1									
Nitrogen, Nitrate/Nitrite	ND	mg/l	0.10	--	1	-	12/01/21 08:34	44,353.2	MR

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Limits			
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG1577449-2									
Nitrogen, Nitrite	104		-		90-110		-		20
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG1577450-2									
Nitrogen, Nitrate	104		-		90-110		-		
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG1580546-2									
Phosphorus, Total	103		-		80-120		-		
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG1582645-2									
Nitrogen, Total Kjeldahl	93		-		78-122		-		
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG1582821-2									
Nitrogen, Nitrate/Nitrite	104		-		90-110		-		





**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1577449-4 QC Sample: L2165417-01 Client ID: MS Sample										
Nitrogen, Nitrite	0.44	4	4.7	106	-	-	-	80-120	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1577450-4 QC Sample: L2165417-01 Client ID: MS Sample										
Nitrogen, Nitrate	0.81	4	5.0	105	-	-	-	83-113	-	6
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1580546-3 QC Sample: L2165391-01 Client ID: MS Sample										
Phosphorus, Total	3.14	2.5	5.66	101	-	-	-	75-125	-	20
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1582645-4 QC Sample: L2165878-02 Client ID: MS Sample										
Nitrogen, Total Kjeldahl	10.4	8	19.1	109	-	-	-	77-111	-	24
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1582821-4 QC Sample: L2162725-98 Client ID: MS Sample										
Nitrogen, Nitrate/Nitrite	1.2	4	5.4	105	-	-	-	80-120	-	20



## Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1577417-2	QC Sample: L2165427-06	Client ID: 2101333-SW103B		
Chlorophyll A	139	150	mg/m3	8		35
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1577449-3	QC Sample: L2165417-01	Client ID: DUP Sample		
Nitrogen, Nitrite	0.44	0.44	mg/l	0		20
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1577450-3	QC Sample: L2165417-01	Client ID: DUP Sample		
Nitrogen, Nitrate	0.81	0.78	mg/l	4		6
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1580546-4	QC Sample: L2165391-01	Client ID: DUP Sample		
Phosphorus, Total	3.14	3.18	mg/l	1		20
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1582645-3	QC Sample: L2165878-02	Client ID: DUP Sample		
Nitrogen, Total Kjeldahl	10.4	11.1	mg/l	7		24
General Chemistry - Westborough Lab	Associated sample(s): 01-06	QC Batch ID: WG1582821-3	QC Sample: L2162725-98	Client ID: DUP Sample		
Nitrogen, Nitrate/Nitrite	1.2	1.2	mg/l	0		20



Serial\_No:12152110:15  
 Lab Number: L2165427  
 Report Date: 12/15/21

Project Name: NEWBURYPORT FROG POND  
 Project Number: 2101333

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**  
**Cooler** A  
**Custody Seal** Absent

<b>Container Information</b>		<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>pH</b>	<b>deg C</b>	<b>C</b>	<b>Seal</b>		
L2165427-01A	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-01B	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-01C	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-01D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-01E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-01F	Plastic 120ml unpreserved	A	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-01G	Plastic 500ml H2SO4 preserved	A	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-01H	Brown Plastic 1000ml unpreserved	A	NA	2.7	Y	Absent		CHLORO-A(1)
L2165427-01I	Brown Plastic 1000ml unpreserved	A	NA	2.7	Y	Absent		CHLORO-A(1)
L2165427-02A	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-02B	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-02C	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-02D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-02E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-02F	Plastic 120ml unpreserved	A	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-02G	Plastic 500ml H2SO4 preserved	A	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-02H	Brown Plastic 1000ml unpreserved	A	NA	2.7	Y	Absent		CHLORO-A(1)
L2165427-02I	Brown Plastic 1000ml unpreserved	A	NA	2.7	Y	Absent		CHLORO-A(1)
L2165427-03A	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-03B	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-03C	Vial Na2S2O3 preserved	A	NA	2.7	Y	Absent		624.1(7)
L2165427-03D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	Y	Absent		E-COLI-MF(.33)

\*Values in parentheses indicate holding time in days



Serial\_No:12152110:15

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165427-03E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-03F	Plastic 120ml unpreserved	A	7	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-03G	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-03H	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-03I	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-04A	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-04B	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-04C	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-04D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-04E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-04F	Plastic 120ml unpreserved	A	7	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-04G	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-04H	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-04I	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-05A	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-05B	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-05C	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-05D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-05E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)
L2165427-05F	Plastic 120ml unpreserved	A	7	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-05G	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-05H	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-05I	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-06A	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-06B	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-06C	Vial Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		624.1(7)
L2165427-06D	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COLI-MF(.33)

\*Values in parentheses indicate holding time in days



Serial\_No:12152110:15

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165427

Project Number: 2101333

Report Date: 12/15/21

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165427-06E	Bacteria Cup Na2S2O3 preserved	A	NA	2.7	2.7	Y	Absent		E-COL-MF(.33)
L2165427-06F	Plastic 120ml unpreserved	A	7	7	2.7	Y	Absent		NO2-353(2),NO3-353(2)
L2165427-06G	Plastic 500ml H2SO4 preserved	A	<2	<2	2.7	Y	Absent		TKN-4500(28),NO3/NO2-353(28),TPHOS-4500(28),TNITROGEN(28)
L2165427-06H	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)
L2165427-06I	Brown Plastic 1000ml unpreserved	A	NA	2.7	2.7	Y	Absent		CHLORO-A(1)



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

## GLOSSARY

### Acronyms

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

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

### Footnotes

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

### Terms

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

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

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

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

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

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

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

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

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

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

#### **Data Qualifiers**

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165427  
**Report Date:** 12/15/21

## REFERENCES

- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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


# Chain-of-Custody Record

Laboratory: Alpha Analytical

Laboratory Job #

Lab use only

Page 1 of 1



**GEI Consultants**  
400 Unicorn Park Drive  
Woburn, MA 01801  
PH: 781.721.4000

Project Name: Newburyport Frog Pond

Project Location: Newburyport, MA

Project Number: 2101333

Project Manager: Krista Wolfe

Send Report to: Krista Wolfe

labdata@geiconsultants.com

781-424-9909 kwolfe@geiconsultants.com

Preservative

None None H2SO4 Na2S2O3

None None

Analysis

Chlorophyll A Nitrite, Nitrate m Col Total Nitrogen Package, Total Phosphorus Chloroform

Sample Handling

Samples Field Filtered YES NO NA

Sampled Shipped With Ice YES NO

Sample Specific Remarks

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MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: YES NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS

State/Federal Program: MA NH RI CT NY ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Lab Sample Number	GEI Sample ID	Collection		Matrix	No. of Bottles	Sampler(s) Initials
		Date	Time			
01	2101333-SW101A	11/30/21	0815	SW	9	CWS
02	2101333-SW101B	11/30/21	0930	SW	9	CWS
03	2101333-SW102A	11/30/21	0845	SW	9	CWS
04	2101333-SW102B	11/30/21	0900	SW	9	CWS
05	2101333-SW103A	11/30/21	0930	SW	9	CWS
06	2101333-SW103B	11/30/21	0945	SW	9	CWS

---

Relinquished by sampler (signature)

1. *[Signature]*

Relinquished by sampler (signature)

2. *[Signature]*

Relinquished by (signature)

3. *[Signature]*

Relinquished by (signature)

4. *[Signature]*

Relinquished by (signature)

5. *[Signature]*

Date: 11-30-21 Time: 10:55

Date: 11-30-21 Time: 12:45

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

---

Turnaround Time (Business days):

5-Day  4-Day \_\_\_\_\_ 3-Day \_\_\_\_\_

2-Day \_\_\_\_\_ 1-Day \_\_\_\_\_ Other \_\_\_\_\_

Additional Requirements/Comments/Remarks:

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.



## ANALYTICAL REPORT

Lab Number:	L2165443
Client:	GEI Consultants 400 Unicorn Park Drive Woburn, MA 01801
ATTN:	Krista Wolfe
Phone:	(781) 721-4095
Project Name:	NEWBURYPORT FROG POND
Project Number:	2101333
Report Date:	12/30/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

---

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



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2165443-01	2101333-SW102A	WATER	NEWBURYPORT, MA	11/30/21 09:00	11/30/21



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

### Case Narrative

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

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

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

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

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

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

---

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

### Case Narrative (continued)

#### Report Revision

December 30, 2021: All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Report Submission

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

#### Semivolatile Organics by Method 625

L2165443-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix. The container was not rinsed as prescribed by the method.

#### Semivolatile Organics by SIM

L2165443-01: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

#### Nitrogen, Ammonia

L2165443-01: The sample has an elevated detection limit due to the dilution required by the sample matrix.

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

Authorized Signature:



Caitlin Walukevich

Title: Technical Director/Representative

Date: 12/30/21

# ORGANICS



# VOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1  
 Analytical Date: 12/02/21 16:39  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS - Westborough Lab</b>						
Methylene chloride	ND		ug/l	1.0	0.56	1
1,1-Dichloroethane	ND		ug/l	1.5	0.40	1
Carbon tetrachloride	ND		ug/l	1.0	0.24	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.34	1
Tetrachloroethene	ND		ug/l	1.0	0.26	1
1,2-Dichloroethane	ND		ug/l	1.5	0.47	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.29	1
Benzene	ND		ug/l	1.0	0.38	1
Toluene	ND		ug/l	1.0	0.31	1
Ethylbenzene	ND		ug/l	1.0	0.28	1
Vinyl chloride	ND		ug/l	1.0	0.38	1
1,1-Dichloroethene	ND		ug/l	1.0	0.31	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	0.17	1
Trichloroethene	ND		ug/l	1.0	0.33	1
1,2-Dichlorobenzene	ND		ug/l	5.0	0.28	1
1,3-Dichlorobenzene	ND		ug/l	5.0	0.27	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.29	1
p/m-Xylene	ND		ug/l	2.0	0.30	1
o-xylene	ND		ug/l	1.0	0.34	1
Xylenes, Total	ND		ug/l	1.0	0.30	1
Acetone	2.9	J	ug/l	10	2.4	1
Methyl tert butyl ether	ND		ug/l	10	0.19	1
Tert-Butyl Alcohol	ND		ug/l	100	3.9	1
Tertiary-Amyl Methyl Ether	ND		ug/l	20	0.28	1

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

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

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	95		60-140
Fluorobenzene	110		60-140
4-Bromofluorobenzene	98		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 128,624.1-SIM  
 Analytical Date: 12/02/21 16:39  
 Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,4-Dioxane	ND		ug/l	5.0	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	111		60-140
4-Bromofluorobenzene	103		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 14,504.1  
 Analytical Date: 12/07/21 16:00  
 Analyst: AMM

Extraction Method: EPA 504.1  
 Extraction Date: 12/07/21 11:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.003	1	A
1,2,3-Trichloropropane	ND		ug/l	0.030	0.020	1	A

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 128,624.1  
Analytical Date: 12/02/21 10:01  
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1578151-10					
Methylene chloride	ND		ug/l	1.0	0.56
1,1-Dichloroethane	ND		ug/l	1.5	0.40
Carbon tetrachloride	ND		ug/l	1.0	0.24
1,1,2-Trichloroethane	ND		ug/l	1.5	0.34
Tetrachloroethene	ND		ug/l	1.0	0.26
1,2-Dichloroethane	ND		ug/l	1.5	0.47
1,1,1-Trichloroethane	ND		ug/l	2.0	0.29
Benzene	ND		ug/l	1.0	0.38
Toluene	ND		ug/l	1.0	0.31
Ethylbenzene	ND		ug/l	1.0	0.28
Vinyl chloride	ND		ug/l	1.0	0.38
1,1-Dichloroethene	ND		ug/l	1.0	0.31
cis-1,2-Dichloroethene	ND		ug/l	1.0	0.17
Trichloroethene	ND		ug/l	1.0	0.33
1,2-Dichlorobenzene	ND		ug/l	5.0	0.28
1,3-Dichlorobenzene	ND		ug/l	5.0	0.27
1,4-Dichlorobenzene	ND		ug/l	5.0	0.29
p/m-Xylene	ND		ug/l	2.0	0.30
o-xylene	ND		ug/l	1.0	0.34
Xylenes, Total	ND		ug/l	1.0	0.30
Acetone	ND		ug/l	10	2.4
Methyl tert butyl ether	ND		ug/l	10	0.19
Tert-Butyl Alcohol	ND		ug/l	100	3.9
Tertiary-Amyl Methyl Ether	ND		ug/l	20	0.28

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 128,624.1  
Analytical Date: 12/02/21 10:01  
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1578151-10					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	93		60-140
Fluorobenzene	107		60-140
4-Bromofluorobenzene	96		60-140

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 128,624.1-SIM  
Analytical Date: 12/02/21 10:01  
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1578247-4					
1,4-Dioxane	2.5	J	ug/l	5.0	2.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Fluorobenzene	111		60-140
4-Bromofluorobenzene	106		60-140



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 14,504.1  
Analytical Date: 12/07/21 14:28  
Analyst: AMM

Extraction Method: EPA 504.1  
Extraction Date: 12/07/21 11:11

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01 Batch: WG1580087-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A
1,2-Dibromo-3-chloropropane	ND		ug/l	0.010	0.003	A
1,2,3-Trichloropropane	ND		ug/l	0.030	0.020	A

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD	Qual	RPD	Limits
	%Recovery	Qual	%Recovery	Qual	%Recovery	Limits						
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1578151-9												
Methylene chloride	105	-	-	-	60-140	-	-	-	-	-	-	28
1,1-Dichloroethane	105	-	-	-	50-150	-	-	-	-	-	-	49
Carbon tetrachloride	115	-	-	-	70-130	-	-	-	-	-	-	41
1,1,2-Trichloroethane	100	-	-	-	70-130	-	-	-	-	-	-	45
Tetrachloroethene	100	-	-	-	70-130	-	-	-	-	-	-	39
1,2-Dichloroethane	105	-	-	-	70-130	-	-	-	-	-	-	49
1,1,1-Trichloroethane	105	-	-	-	70-130	-	-	-	-	-	-	36
Benzene	115	-	-	-	65-135	-	-	-	-	-	-	61
Toluene	110	-	-	-	70-130	-	-	-	-	-	-	41
Ethylbenzene	110	-	-	-	60-140	-	-	-	-	-	-	63
Vinyl chloride	105	-	-	-	5-195	-	-	-	-	-	-	66
1,1-Dichloroethene	105	-	-	-	50-150	-	-	-	-	-	-	32
cis-1,2-Dichloroethene	110	-	-	-	60-140	-	-	-	-	-	-	30
Trichloroethene	120	-	-	-	65-135	-	-	-	-	-	-	48
1,2-Dichlorobenzene	100	-	-	-	65-135	-	-	-	-	-	-	57
1,3-Dichlorobenzene	100	-	-	-	70-130	-	-	-	-	-	-	43
1,4-Dichlorobenzene	100	-	-	-	65-135	-	-	-	-	-	-	57
p/m-Xylene	105	-	-	-	60-140	-	-	-	-	-	-	30
o-xylene	100	-	-	-	60-140	-	-	-	-	-	-	30
Acetone	96	-	-	-	40-160	-	-	-	-	-	-	30
Methyl tert butyl ether	90	-	-	-	60-140	-	-	-	-	-	-	30
Tert-Butyl Alcohol	90	-	-	-	60-140	-	-	-	-	-	-	30
Tertiary-Amyl Methyl Ether	85	-	-	-	60-140	-	-	-	-	-	-	30



### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits	
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1578151-9									
<b>Surrogate</b>									
Pentafluorobenzene		97							60-140
Fluorobenzene		111							60-140
4-Bromofluorobenzene		100							60-140



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1578247-3								
1,4-Dioxane	98		-		60-140	-		20

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Fluorobenzene	110				60-140
4-Bromofluorobenzene	106				60-140



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD	Limits	Column
	%Recovery	Qual	%Recovery	Qual	%Recovery	Limits					
Microextractables by GC - Westborough Lab Associated sample(s): 01 Batch: WG1580087-2											
1,2-Dibromoethane	82		-		80-120		-				A
1,2-Dibromo-3-chloropropane	86		-		80-120		-				A
1,2,3-Trichloropropane	98		-		80-120		-				A



### Matrix Spike Analysis Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	Qual	RPD	Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1580087-3 QC Sample: L2165306-01 Client ID: MS Sample													
1,2-Dibromoethane	ND	0.251	0.241	96	-	-	-	80-120	-	-	-	20	A
1,2-Dibromo-3-chloropropane	ND	0.251	0.244	97	-	-	-	80-120	-	-	-	20	A
1,2,3-Trichloropropane	ND	0.251	0.286	114	-	-	-	80-120	-	-	-	20	A



# SEMIVOLATILES

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 129,625.1  
 Analytical Date: 12/06/21 18:46  
 Analyst: SZ

Extraction Method: EPA 625.1  
 Extraction Date: 12/04/21 07:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Bis(2-ethylhexyl)phthalate	ND		ug/l	8.80	6.80	1
Butyl benzyl phthalate	ND		ug/l	20.0	2.68	1
Di-n-butylphthalate	ND		ug/l	20.0	2.52	1
Di-n-octylphthalate	ND		ug/l	20.0	2.53	1
Diethyl phthalate	ND		ug/l	20.0	2.87	1
Dimethyl phthalate	ND		ug/l	20.0	5.60	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		42-122
2-Fluorobiphenyl	79		46-121
4-Terphenyl-d14	88		47-138



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 129,625.1-SIM  
 Analytical Date: 12/05/21 14:51  
 Analyst: RP

Extraction Method: EPA 625.1  
 Extraction Date: 12/04/21 07:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/l	0.100	0.018	1
Fluoranthene	ND		ug/l	0.100	0.020	1
Naphthalene	0.016	J	ug/l	0.100	0.013	1
Benzo(a)anthracene	ND		ug/l	0.100	0.017	1
Benzo(a)pyrene	ND		ug/l	0.100	0.025	1
Benzo(b)fluoranthene	ND		ug/l	0.100	0.026	1
Benzo(k)fluoranthene	ND		ug/l	0.100	0.021	1
Chrysene	ND		ug/l	0.100	0.018	1
Acenaphthylene	ND		ug/l	0.100	0.021	1
Anthracene	ND		ug/l	0.100	0.018	1
Benzo(ghi)perylene	ND		ug/l	0.100	0.041	1
Fluorene	ND		ug/l	0.100	0.018	1
Phenanthrene	ND		ug/l	0.100	0.020	1
Dibenzo(a,h)anthracene	ND		ug/l	0.100	0.040	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	0.041	1
Pyrene	ND		ug/l	0.100	0.020	1
Pentachlorophenol	ND		ug/l	1.00	0.034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		25-87
Phenol-d6	28		16-65
Nitrobenzene-d5	69		42-122
2-Fluorobiphenyl	67		46-121
2,4,6-Tribromophenol	90		45-128
4-Terphenyl-d14	70		47-138

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 129,625.1  
Analytical Date: 12/06/21 13:22  
Analyst: SZ

Extraction Method: EPA 625.1  
Extraction Date: 12/04/21 07:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1579070-1					
Bis(2-ethylhexyl)phthalate	ND		ug/l	2.20	1.70
Butyl benzyl phthalate	ND		ug/l	5.00	0.670
Di-n-butylphthalate	ND		ug/l	5.00	0.631
Di-n-octylphthalate	ND		ug/l	5.00	0.633
Diethyl phthalate	ND		ug/l	5.00	0.717
Dimethyl phthalate	ND		ug/l	5.00	1.40

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		42-122
2-Fluorobiphenyl	90		46-121
4-Terphenyl-d14	103		47-138

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 129,625.1-SIM  
**Analytical Date:** 12/05/21 14:19  
**Analyst:** DV

**Extraction Method:** EPA 625.1  
**Extraction Date:** 12/04/21 07:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1579076-1					
Acenaphthene	ND		ug/l	0.100	0.018
Fluoranthene	ND		ug/l	0.100	0.020
Naphthalene	ND		ug/l	0.100	0.013
Benzo(a)anthracene	ND		ug/l	0.100	0.017
Benzo(a)pyrene	ND		ug/l	0.100	0.025
Benzo(b)fluoranthene	ND		ug/l	0.100	0.026
Benzo(k)fluoranthene	ND		ug/l	0.100	0.021
Chrysene	ND		ug/l	0.100	0.018
Acenaphthylene	ND		ug/l	0.100	0.021
Anthracene	ND		ug/l	0.100	0.018
Benzo(ghi)perylene	ND		ug/l	0.100	0.041
Fluorene	ND		ug/l	0.100	0.018
Phenanthrene	ND		ug/l	0.100	0.020
Dibenzo(a,h)anthracene	ND		ug/l	0.100	0.040
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.100	0.041
Pyrene	ND		ug/l	0.100	0.020
Pentachlorophenol	ND		ug/l	1.00	0.034

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		25-87
Phenol-d6	35		16-65
Nitrobenzene-d5	86		42-122
2-Fluorobiphenyl	83		46-121
2,4,6-Tribromophenol	106		45-128
4-Terphenyl-d14	87		47-138

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS %Recovery	Qual	LCS D %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1579070-2								
Bis(2-ethylhexyl)phthalate	93		-		29-137	-		82
Butyl benzyl phthalate	81		-		1-140	-		60
Di-n-butylphthalate	85		-		8-120	-		47
Di-n-octylphthalate	88		-		19-132	-		69
Diethyl phthalate	80		-		1-120	-		100
Dimethyl phthalate	75		-		1-120	-		183

Surrogate	LCS %Recovery	Qual	LCS D %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	68				42-122
2-Fluorobiphenyl	68				46-121
4-Terphenyl-d14	79				47-138



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD	Qual	RPD	Limits
	%Recovery	Qual	%Recovery	Qual	%Recovery	Limits						
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1579076-3												
Acenaphthene	75	-	-	-	60-132	-	-	-	-	-	-	30
Fluoranthene	87	-	-	-	43-121	-	-	-	-	-	-	30
Naphthalene	74	-	-	-	36-120	-	-	-	-	-	-	30
Benzo(a)anthracene	79	-	-	-	42-133	-	-	-	-	-	-	30
Benzo(a)pyrene	81	-	-	-	32-148	-	-	-	-	-	-	30
Benzo(b)fluoranthene	83	-	-	-	42-140	-	-	-	-	-	-	30
Benzo(k)fluoranthene	82	-	-	-	25-146	-	-	-	-	-	-	30
Chrysene	72	-	-	-	44-140	-	-	-	-	-	-	30
Acenaphthylene	88	-	-	-	54-126	-	-	-	-	-	-	30
Anthracene	79	-	-	-	43-120	-	-	-	-	-	-	30
Benzo(ghi)perylene	81	-	-	-	1-195	-	-	-	-	-	-	30
Fluorene	82	-	-	-	70-120	-	-	-	-	-	-	30
Phenanthrene	75	-	-	-	65-120	-	-	-	-	-	-	30
Dibenzo(a,h)anthracene	89	-	-	-	1-200	-	-	-	-	-	-	30
Indeno(1,2,3-cd)pyrene	82	-	-	-	1-151	-	-	-	-	-	-	30
Pyrene	84	-	-	-	70-120	-	-	-	-	-	-	30
Pentachlorophenol	71	-	-	-	38-152	-	-	-	-	-	-	30



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD		RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	RPD	Qual	
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1579076-3									
<b>Surrogate</b>									
2-Fluorophenol	45								25-87
Phenol-d6	34								16-65
Nitrobenzene-d5	77								42-122
2-Fluorobiphenyl	76								46-121
2,4,6-Tribromophenol	110								45-128
4-Terphenyl-d14	78								47-138



# PCBS

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

Lab ID: L2165443-01  
 Client ID: 2101333-SW102A  
 Sample Location: NEWBURYPORT, MA

Date Collected: 11/30/21 09:00  
 Date Received: 11/30/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 127,608.3  
 Analytical Date: 12/05/21 20:31  
 Analyst: JWL

Extraction Method: EPA 608.3  
 Extraction Date: 12/04/21 22:46  
 Cleanup Method: EPA 3665A  
 Cleanup Date: 12/05/21  
 Cleanup Method: EPA 3660B  
 Cleanup Date: 12/05/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.250	0.016	1	A
Aroclor 1221	ND		ug/l	0.250	0.022	1	A
Aroclor 1232	ND		ug/l	0.250	0.046	1	A
Aroclor 1242	ND		ug/l	0.250	0.036	1	A
Aroclor 1248	ND		ug/l	0.250	0.046	1	A
Aroclor 1254	ND		ug/l	0.250	0.017	1	A
Aroclor 1260	ND		ug/l	0.200	0.034	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	48		37-123	B
Decachlorobiphenyl	44		38-114	B
2,4,5,6-Tetrachloro-m-xylene	46		37-123	A
Decachlorobiphenyl	43		38-114	A



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 127,608.3  
Analytical Date: 12/05/21 19:45  
Analyst: JM

Extraction Method: EPA 608.3  
Extraction Date: 12/04/21 22:46  
Cleanup Method: EPA 3665A  
Cleanup Date: 12/05/21  
Cleanup Method: EPA 3660B  
Cleanup Date: 12/05/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG1579232-1						
Aroclor 1016	ND		ug/l	0.250	0.016	A
Aroclor 1221	ND		ug/l	0.250	0.022	A
Aroclor 1232	ND		ug/l	0.250	0.046	A
Aroclor 1242	ND		ug/l	0.250	0.036	A
Aroclor 1248	ND		ug/l	0.250	0.046	A
Aroclor 1254	ND		ug/l	0.250	0.017	A
Aroclor 1260	ND		ug/l	0.200	0.034	A

Surrogate	%Recovery	Qualifier	Acceptance	
			Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		37-123	B
Decachlorobiphenyl	71		38-114	B
2,4,5,6-Tetrachloro-m-xylene	63		37-123	A
Decachlorobiphenyl	69		38-114	A

### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual	Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG1579232-2								
Aroclor 1016	67	-	50-140	-	36	-	36	A
Aroclor 1260	67	-	8-140	-	38	-	38	A

Surrogate	LCS		LCSD		Acceptance	
	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63				37-123	B
Decachlorobiphenyl	70				38-114	B
2,4,5,6-Tetrachloro-m-xylene	61				37-123	A
Decachlorobiphenyl	70				38-114	A



## METALS

**Project Name:** NEWBURYPORT FROG POND**Lab Number:** L2165443**Project Number:** 2101333**Report Date:** 12/30/21**SAMPLE RESULTS**

Lab ID: L2165443-01

Date Collected: 11/30/21 09:00

Client ID: 2101333-SW102A

Date Received: 11/30/21

Sample Location: NEWBURYPORT, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Antimony, Total	ND		mg/l	0.00400	0.00042	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Arsenic, Total	0.00178		mg/l	0.00100	0.00016	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Chromium, Total	ND		mg/l	0.00100	0.00017	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Copper, Total	0.00177		mg/l	0.00100	0.00038	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Iron, Total	0.672		mg/l	0.050	0.009	1	12/08/21 12:20	12/09/21 20:23	EPA 3005A	19,200.7	DL
Lead, Total	0.00264		mg/l	0.00100	0.00034	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	12/08/21 13:26	12/08/21 19:33	EPA 245.1	3,245.1	AC
Nickel, Total	ND		mg/l	0.00200	0.00055	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
Zinc, Total	0.01338		mg/l	0.01000	0.00341	1	12/08/21 12:20	12/08/21 19:50	EPA 3005A	3,200.8	CD
<b>General Chemistry - Mansfield Lab</b>											
Chromium, Trivalent	ND		mg/l	0.010	0.010	1		12/08/21 19:50	NA	107,-	



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1580319-1									
Iron, Total	ND	mg/l	0.050	0.009	1	12/08/21 12:20	12/09/21 20:13	19,200.7	DL

### Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1580320-1									
Antimony, Total	ND	mg/l	0.00400	0.00042	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Arsenic, Total	ND	mg/l	0.00100	0.00016	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Cadmium, Total	ND	mg/l	0.00020	0.00005	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Chromium, Total	ND	mg/l	0.00100	0.00017	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Copper, Total	ND	mg/l	0.00100	0.00038	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Lead, Total	ND	mg/l	0.00100	0.00034	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Nickel, Total	ND	mg/l	0.00200	0.00055	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Selenium, Total	ND	mg/l	0.00500	0.00173	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Silver, Total	ND	mg/l	0.00040	0.00016	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD
Zinc, Total	ND	mg/l	0.01000	0.00341	1	12/08/21 12:20	12/08/21 19:14	3,200.8	CD

### Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1580322-1									
Mercury, Total	ND	mg/l	0.00020	0.00009	1	12/08/21 13:26	12/08/21 19:00	3,245.1	AC

### Prep Information

Digestion Method: EPA 245.1



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Qual			
<b>Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1580319-2</b>									
Iron, Total	103	-	-	-	85-115	-	-	-	-
<b>Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1580320-2</b>									
Antimony, Total	92	-	-	-	85-115	-	-	-	-
Arsenic, Total	100	-	-	-	85-115	-	-	-	-
Cadmium, Total	101	-	-	-	85-115	-	-	-	-
Chromium, Total	102	-	-	-	85-115	-	-	-	-
Copper, Total	100	-	-	-	85-115	-	-	-	-
Lead, Total	98	-	-	-	85-115	-	-	-	-
Nickel, Total	99	-	-	-	85-115	-	-	-	-
Selenium, Total	102	-	-	-	85-115	-	-	-	-
Silver, Total	102	-	-	-	85-115	-	-	-	-
Zinc, Total	97	-	-	-	85-115	-	-	-	-
<b>Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1580322-2</b>									
Mercury, Total	97	-	-	-	85-115	-	-	-	-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	Qual	RPD	Qual	RPD	Limits
<b>Total Metals - Mansfield Lab Associated sample(s): 01</b> QC Batch ID: WG1580319-3 QC Sample: L2166867-02 Client ID: MS Sample															
Iron, Total	56.5	1	50.6	0	Q	-	-	-	75-125	-	-	-	-	-	20
<b>Total Metals - Mansfield Lab Associated sample(s): 01</b> QC Batch ID: WG1580319-7 QC Sample: L2166867-03 Client ID: MS Sample															
Iron, Total	0.068	1	1.11	104	-	-	-	-	75-125	-	-	-	-	-	20
<b>Total Metals - Mansfield Lab Associated sample(s): 01</b> QC Batch ID: WG1580320-3 QC Sample: L2166867-02 Client ID: MS Sample															
Antimony, Total	0.00120J	0.5	0.4073	81	-	-	-	-	70-130	-	-	-	-	-	20
Arsenic, Total	0.02240	0.12	0.1284	88	-	-	-	-	70-130	-	-	-	-	-	20
Cadmium, Total	0.00021	0.053	0.05258	99	-	-	-	-	70-130	-	-	-	-	-	20
Chromium, Total	0.04962	0.2	0.2305	90	-	-	-	-	70-130	-	-	-	-	-	20
Copper, Total	0.06472	0.25	0.2999	94	-	-	-	-	70-130	-	-	-	-	-	20
Lead, Total	0.02499	0.53	0.5208	94	-	-	-	-	70-130	-	-	-	-	-	20
Nickel, Total	0.05973	0.5	0.5206	92	-	-	-	-	70-130	-	-	-	-	-	20
Selenium, Total	ND	0.12	0.1139	95	-	-	-	-	70-130	-	-	-	-	-	20
Silver, Total	ND	0.05	0.04803	96	-	-	-	-	70-130	-	-	-	-	-	20
Zinc, Total	0.1391	0.5	0.6001	92	-	-	-	-	70-130	-	-	-	-	-	20



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580320-5 QC Sample: L2166867-03 Client ID: MS Sample								
Antimony, Total	ND	0.5	0.4110	82	-	-	70-130	20
Arsenic, Total	ND	0.12	0.1071	89	-	-	70-130	20
Cadmium, Total	ND	0.053	0.04946	93	-	-	70-130	20
Chromium, Total	ND	0.2	0.1800	90	-	-	70-130	20
Copper, Total	0.00072J	0.25	0.2295	92	-	-	70-130	20
Lead, Total	ND	0.53	0.4761	90	-	-	70-130	20
Nickel, Total	0.00090J	0.5	0.4565	91	-	-	70-130	20
Selenium, Total	ND	0.12	0.1187	99	-	-	70-130	20
Silver, Total	ND	0.05	0.04688	94	-	-	70-130	20
Zinc, Total	0.01315	0.5	0.4605	89	-	-	70-130	20

Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580322-3 QC Sample: L2166627-02 Client ID: MS Sample								
Mercury, Total	0.00012J	0.005	0.00453	91	-	-	70-130	20

Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580322-5 QC Sample: L2166627-03 Client ID: MS Sample								
Mercury, Total	0.00012J	0.005	0.00430	86	-	-	70-130	20





## Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580319-4 QC Sample: L2166867-02 Client ID: DUP Sample</b>						
Iron, Total	56.5	46.4	mg/l	20		20
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580319-8 QC Sample: L2166867-03 Client ID: DUP Sample</b>						
Iron, Total	0.068	0.074	mg/l	9		20
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580320-4 QC Sample: L2166867-02 Client ID: DUP Sample</b>						
Antimony, Total	0.00120J	0.00277J	mg/l	NC		20
Arsenic, Total	0.02240	0.01947	mg/l	14		20
Cadmium, Total	0.00021	0.00022	mg/l	4		20
Chromium, Total	0.04962	0.04187	mg/l	17		20
Copper, Total	0.06472	0.05930	mg/l	9		20
Lead, Total	0.02499	0.02421	mg/l	3		20
Nickel, Total	0.05973	0.05235	mg/l	13		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Zinc, Total	0.1391	0.1253	mg/l	10		20



## Lab Duplicate Analysis Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580320-6 QC Sample: L2166867-03 Client ID: DUP Sample</b>					
Antimony, Total	ND	0.00445	mg/l	NC	20
Arsenic, Total	ND	0.00036J	mg/l	NC	20
Cadmium, Total	ND	ND	mg/l	NC	20
Chromium, Total	ND	0.00021J	mg/l	NC	20
Copper, Total	0.00072J	0.1861	mg/l	NC	20
Lead, Total	ND	ND	mg/l	NC	20
Nickel, Total	0.00090J	0.00087J	mg/l	NC	20
Selenium, Total	ND	ND	mg/l	NC	20
Silver, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.01315	0.01323	mg/l	1	20
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580322-4 QC Sample: L2166627-02 Client ID: DUP Sample</b>					
Mercury, Total	0.00012J	0.00027	mg/l	NC	20
<b>Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580322-6 QC Sample: L2166627-03 Client ID: DUP Sample</b>					
Mercury, Total	0.00012J	ND	mg/l	NC	20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**SAMPLE RESULTS**

**Lab ID:** L2165443-01  
**Client ID:** 2101333-SW102A  
**Sample Location:** NEWBURYPORT, MA

**Date Collected:** 11/30/21 09:00  
**Date Received:** 11/30/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total Suspended	25.		mg/l	25	NA	5	-	12/01/21 12:45	121,2540D	MD
Cyanide, Total	ND		mg/l	0.005	0.001	1	12/09/21 05:20	12/09/21 14:10	121,4500CN-CE	CS
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	11/30/21 23:29	121,4500CL-D	AS
Nitrogen, Ammonia	0.173	J	mg/l	0.375	0.120	5	12/10/21 03:10	12/10/21 22:39	121,4500NH3-BH	AT
TPH, SGT-HEM	2.25	J	mg/l	4.00	1.24	1	12/09/21 09:45	12/09/21 11:45	140,1664B	NP
Phenolics, Total	ND		mg/l	0.030	0.016	1	12/06/21 07:33	12/06/21 10:24	4,420.1	KP
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	12/01/21 06:50	12/01/21 07:22	1,7196A	KP
<b>Anions by Ion Chromatography - Westborough Lab</b>										
Chloride	7.20		mg/l	0.500	0.083	1	-	12/13/21 21:58	44,300.0	SH



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1577422-1										
Chlorine, Total Residual	ND		mg/l	0.02	0.01	1	-	11/30/21 23:29	121,4500CL-D	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1577540-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	12/01/21 06:50	12/01/21 07:21	1,7196A	KP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1577743-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	12/01/21 12:45	121,2540D	MD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1579462-1										
Phenolics, Total	ND		mg/l	0.030	0.016	1	12/06/21 07:33	12/06/21 10:23	4,420.1	KP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1580597-1										
TPH, SGT-HEM	3.50	J	mg/l	4.00	1.24	1	12/09/21 09:45	12/09/21 11:45	140,1664B	NP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1580934-1										
Cyanide, Total	ND		mg/l	0.005	0.001	1	12/09/21 05:20	12/09/21 14:05	121,4500CN-CE	CS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1581433-1										
Nitrogen, Ammonia	ND		mg/l	0.075	0.024	1	12/10/21 03:10	12/10/21 22:24	121,4500NH3-BH	AT
Anions by Ion Chromatography - Westborough Lab for sample(s): 01 Batch: WG1582782-1										
Chloride	0.199	J	mg/l	0.500	0.083	1	-	12/13/21 16:49	44,300.0	SH

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS		LCSD		%Recovery		RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual	Limits	Qual			
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1577422-2									
Chlorine, Total Residual	92		-		90-110		-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1577540-2									
Chromium, Hexavalent	107		-		85-115		-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1577743-2									
Solids, Total Suspended	103		-		80-120		-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1579462-2									
Phenolics, Total	102		-		70-130		-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1580597-2									
TPH	73		-		64-132		-		34
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1580934-2									
Cyanide, Total	90		-		90-110		-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1581433-2									
Nitrogen, Ammonia	95		-		80-120		-		20



### Lab Control Sample Analysis

Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	LCS %Recovery	LCS %Recovery	%Recovery Limits	RPD	RPD Limits
-----------	------------------	------------------	---------------------	-----	------------

Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 Batch: WG1582782-2

101

90-110

-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	MS Added	MS Found	%Recovery	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1577422-4 QC Sample: L2165443-01 Client ID: 2101333-SW102A										
Chlorine, Total Residual	ND	0.25	0.24	96	-	-	-	80-120	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1577540-4 QC Sample: L2165443-01 Client ID: 2101333-SW102A										
Chromium, Hexavalent	ND	0.1	0.106	106	-	-	-	85-115	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1579462-4 QC Sample: L2166691-01 Client ID: MS Sample										
Phenolics, Total	ND	0.4	0.38	96	-	-	-	70-130	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1580597-4 QC Sample: L2166627-03 Client ID: MS Sample										
TPH	1.57J	19.6	15.5	79	-	-	-	64-132	-	34
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1580934-4 QC Sample: L2165443-01 Client ID: 2101333-SW102A										
Cyanide, Total	ND	0.2	0.204	102	-	-	-	90-110	-	30
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1581433-4 QC Sample: L2165582-01 Client ID: MS Sample										
Nitrogen, Ammonia	0.122	4	3.93	95	-	-	-	80-120	-	20
Anions by Ion Chromatography - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1582782-3 QC Sample: L2166261-02 Client ID: MS Sample										
Chloride	0.207J	4	4.16	99	-	-	-	90-110	-	18





## Lab Duplicate Analysis Batch Quality Control

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1577422-3	QC Sample: L2165443-01	Client ID: 2101333-SW102A		
Chlorine, Total Residual	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1577540-3	QC Sample: L2165443-01	Client ID: 2101333-SW102A		
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1577743-3	QC Sample: L2165418-01	Client ID: DUP Sample		
Solids, Total Suspended	120	120	mg/l	0		29
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1579462-3	QC Sample: L2166691-01	Client ID: DUP Sample		
Phenolics, Total	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1580597-3	QC Sample: L2166627-02	Client ID: DUP Sample		
TPH	ND	ND	mg/l	NC		34
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1580934-3	QC Sample: L2167366-01	Client ID: DUP Sample		
Cyanide, Total	0.016	0.016	mg/l	1		30
General Chemistry - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1581433-3	QC Sample: L2165582-01	Client ID: DUP Sample		
Nitrogen, Ammonia	0.122	0.108	mg/l	12		20
Anions by Ion Chromatography - Westborough Lab	Associated sample(s): 01	QC Batch ID: WG1582782-4	QC Sample: L2166261-02	Client ID: DUP Sample		
Chloride	0.207J	0.198J	mg/l	NC		18



Serial\_No:12302112:29

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165443

Project Number: 2101333

Report Date: 12/30/21

Sample Receipt and Container Information

YES

Were project specific reporting limits specified?

Cooler Information Custody Seal Absent

Table with columns: Container ID, Container Type, Cooler, Initial pH, Final pH, Temp deg C, Pres, Seal, Frozen Date/Time, Analysis(\*). Rows include various container IDs like L2165443-01A through L2165443-01U with corresponding analysis details.



\*Values in parentheses indicate holding time in days

Serial\_No:12302112:29

Project Name: NEWBURYPORT FROG POND

Lab Number: L2165443

Project Number: 2101333

Report Date: 12/30/21

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2165443-01V	Amber 1000ml Na2S2O3	D	7	7	3.0	Y	Absent		625.1-RGP(7),625.1-SIM-RGP(7)
L2165443-01W	Amber 1000ml Na2S2O3	D	7	7	3.0	Y	Absent		625.1-RGP(7),625.1-SIM-RGP(7)
L2165443-01X	Amber 1000ml HCl preserved	D	NA		3.0	Y	Absent		TPH-1664(28)
L2165443-01Y	Amber 1000ml HCl preserved	D	NA		3.0	Y	Absent		TPH-1664(28)



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

## GLOSSARY

### Acronyms

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

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

#### Footnotes

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

#### Terms

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

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

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

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

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

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

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

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

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

#### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

**Report Format:** DU Report with 'J' Qualifiers



**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

**Data Qualifiers**

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** NEWBURYPORT FROG POND  
**Project Number:** 2101333

**Lab Number:** L2165443  
**Report Date:** 12/30/21

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.
- 14 Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 107 Alpha Analytical - In-house calculation method.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 127 Method 608.3: Organochlorine Pesticides and PCBs by GC/HSD, EPA 821-R-16-009, December 2016.
- 128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.
- 129 Method 625.1: Base/Neutrals and Acids by GC/MS, EPA 821-R-16-007, December 2016.
- 140 Method 1664, Revision B: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-10-001, February 2010.

## LIMITATION OF LIABILITIES

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

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



## Certification Information

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

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

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

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**


**SM2340B**

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





	<b>Subcontract Chain of Custody</b> Tek Lab, Inc. 5445 Horsehoe Lake Road Collinsville, IL 62234-7425	Alpha Job Number L2165443			
<b>Regulatory Requirements/Report Limits</b>					
<b>Client Information</b>					
Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019  Phone: 716.427.5228 Email: jbymes@alphalab.com	<b>Project Information</b> State/Federal Program: Regulatory Criteria:				
<b>Turnaround &amp; Deliverables Information</b>					
Due Date: 12/14/21 Deliverables:					
<b>Project Specific Requirements and/or Report Requirements</b>					
Reference following Alpha Job Number on final report/deliverables: L2165443 Report to include Method Blank, LCS/LCSD:					
Additional Comments: Send all results/reports to subreports@alphalab.com NPDES RGP					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
	2101333-SW102A	11-30-21 09:00	WATER	Ethanol by EPA 1671 Revision A	
Relinquished By: <i>C. Chean</i>			Date/Time: 12/1/21	Received By:	Date/Time:
Form No: AL_subcoc					



December 07, 2021

Jennifer Byrnes  
 Alpha Analytical  
 145 Flanders Road  
 Westborough, MA 01581  
 TEL: (716) 427-5228  
 FAX:



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

**RE:** L2165443

**WorkOrder:** 21120102

Dear Jennifer Byrnes:

TEKLAB, INC received 1 sample on 12/2/2021 9:20:00 AM for the analysis presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink that reads "Elizabeth A. Hurley".

Elizabeth A. Hurley  
 Project Manager  
 (618)344-1004 ex 33  
[ehurley@teklabinc.com](mailto:ehurley@teklabinc.com)



## Report Contents

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

This reporting package includes the following:

Cover Letter	1
Report Contents	2
Definitions	3
Case Narrative	5
Accreditations	6
Laboratory Results	7
Quality Control Results	8
Receiving Check List	9
Chain of Custody	Appended



## Definitions

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

### Abbr Definition

\* Analytes on report marked with an asterisk are not NELAP accredited

CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.

CRQL A Client Requested Quantitation Limit is a reporting limit that varies according to customer request. The CRQL may not be less than the MDL.

DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilution factors.

DNI Did not ignite

DUP Laboratory duplicate is a replicate aliquot prepared under the same laboratory conditions and independently analyzed to obtain a measure of precision.

ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.

IDPH IL Dept. of Public Health

LCS Laboratory control sample is a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes and analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MBLK Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.

MDL "The method detection limit is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results."

MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).

MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MW Molecular weight

NC Data is not acceptable for compliance purposes

ND Not Detected at the Reporting Limit

NELAP NELAP Accredited

PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions.

RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.

RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).

SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.

Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

TIC Tentatively identified compound: Analytes tentatively identified in the sample by using a library search. Only results not in the calibration standard will be reported as tentatively identified compounds. Results for tentatively identified compounds that are not present in the calibration standard, but are assigned a specific chemical name based upon the library search, are calculated using total peak areas from reconstructed ion chromatograms and a response factor of one. The nearest Internal Standard is used for the calculation. The results of any TICs must be considered estimated, and are flagged with a "T". If the estimated result is above the calibration range it is flagged "ET"

TNTC Too numerous to count (> 200 CFU)



## Definitions

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

### Qualifiers

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



## Case Narrative

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

Cooler Receipt Temp: 2.0 °C

### Locations

#### Collinsville

**Address** 5445 Horseshoe Lake Road  
Collinsville, IL 62234-7425

**Phone** (618) 344-1004

**Fax** (618) 344-1005

**Email** jhriley@teklabinc.com

#### Collinsville Air

**Address** 5445 Horseshoe Lake Road  
Collinsville, IL 62234-7425

**Phone** (618) 344-1004

**Fax** (618) 344-1005

**Email** EHurley@teklabinc.com

#### Springfield

**Address** 3920 Pintail Dr  
Springfield, IL 62711-9415

**Phone** (217) 698-1004

**Fax** (217) 698-1005

**Email** KKlostermann@teklabinc.com

#### Chicago

**Address** 1319 Butterfield Rd.  
Downers Grove, IL 60515

**Phone** (630) 324-6855

**Fax**

**Email** arenner@teklabinc.com

#### Kansas City

**Address** 8421 Nieman Road  
Lenexa, KS 66214

**Phone** (913) 541-1998

**Fax** (913) 541-1998

**Email** jhriley@teklabinc.com



## Accreditations

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2022	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2022	Collinsville
Louisiana	LDEQ	05002	NELAP	6/30/2022	Collinsville
Louisiana	LDEQ	05003	NELAP	6/30/2022	Collinsville
Oklahoma	ODEQ	9978	NELAP	8/31/2022	Collinsville
Arkansas	ADEQ	88-0966		3/14/2022	Collinsville
Illinois	IDPH	17584		5/31/2023	Collinsville
Kentucky	UST	0073		1/31/2022	Collinsville
Missouri	MDNR	00930		5/31/2023	Collinsville
Missouri	MDNR	930		1/31/2022	Collinsville





## Laboratory Results

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

Lab ID: 21120102-001

Client Sample ID: 2101333-SW102A

Matrix: AQUEOUS

Collection Date: 11/30/2021 9:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
<b>EPA 600 1671A, PHARMACEUTICAL MANUFACTURING INDUSTRY NON-PURGEABLE VOLATILE ORGANICS</b>								
Ethanol	*	20		ND	mg/L	1	12/03/2021 13:29	R303394



## Quality Control Results

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

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

Batch R303394		SampType: MBLK		Units mg/L							
SampID: MBLK-120321											
Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Ethanol	*	20		ND						12/03/2021	

Batch R303394		SampType: LCS		Units mg/L							
SampID: LCS-120321											
Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Ethanol	*	20		270	250.0	0	108.8	70	132	12/03/2021	

Batch R303394		SampType: MS		Units mg/L							
SampID: 21120102-001AMS											
Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Ethanol	*	20		270	250.0	0	109.6	70	132	12/03/2021	

Batch R303394		SampType: MSD		Units mg/L						RPD Limit: 30		Date Analyzed
SampID: 21120102-001AMSD												
Analyses	Cert	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed		
Ethanol	*	20		270	250.0	0	108.4	273.9	1.05	12/03/2021		



## Receiving Check List

<http://www.teklabinc.com/>

Client: Alpha Analytical

Work Order: 21120102

Client Project: L2165443

Report Date: 07-Dec-21

Carrier: UPS

Received By: MLD

Completed by: *Marvin L. Darling II*

Reviewed by: *Elizabeth A. Hurley*

On:

On:

02-Dec-21

02-Dec-21

Marvin L. Darling

Elizabeth A. Hurley

Pages to follow: Chain of custody


Extra pages included

- |   |   |   |  |                                  |
|---|---|---|--|----------------------------------|
| Shipping container/cooler in good condition?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             | Not Present <input type="checkbox"/>   | Temp °C <b>2.0</b>               |
| Type of thermal preservation?                           | None <input type="checkbox"/>           | Ice <input checked="" type="checkbox"/> | Blue Ice <input type="checkbox"/>      | Dry Ice <input type="checkbox"/> |
| Chain of custody present?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Chain of custody agrees with sample labels?             | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Samples in proper container/bottle?                     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Sample containers intact?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Sufficient sample volume for indicated test?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| All samples received within holding time?               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |
| Reported field parameters measured:                     | Field <input type="checkbox"/>          | Lab <input type="checkbox"/>            | NA <input checked="" type="checkbox"/> |                                  |
| Container/Temp Blank temperature in compliance?         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>             |  |                                  |

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

- |   |   |                             |   |
|---|---|-----------------------------|---|
| Water – at least one vial per sample has zero headspace?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | No VOA vials <input type="checkbox"/>                 |
| Water - TOX containers have zero headspace?               | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | No TOX containers <input checked="" type="checkbox"/> |
| Water - pH acceptable upon receipt?                       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                           |
| NPDES/CWA TCN interferences checked/treated in the field? | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>                |

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

		<h3>Subcontract Chain of Custody</h3> <p>Tek Lab, Inc. 5445 Horsehoe Lake Road Collinsville, IL 62234-7425</p>		<p>Alpha Job Number L2165443</p>	
<h4>Client Information</h4> <p>Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1019 Phone: 716.427.5228 Email: jbymes@alphalab.com</p>		<h4>Project Information</h4> <p>Project Location: MA Project Manager: Jennifer Bymes Turnaround &amp; Deliverables Information Due Date: 12/14/21 Deliverables:</p>		<h4>Regulatory Requirements/Report Limits</h4> <p>State/Federal Program: Regulatory Criteria:</p>	
<h4>Project Specific Requirements and/or Report Requirements</h4>					
Reference following Alpha Job Number on final report/deliverables: L2165443		Report to include Method Blank, LCS/LCSD:			
Additional Comments: Send all results/reports to subreports@alphalab.com NPDES RGP					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch QC
21120102-001	2101333-SW102A	11-30-21 09:00	WATER	Ethanol by EPA 1671 Revision A  2.0° < LTB1 DNS PR 12/2/21	
Relinquished By:		Date/Time:	Received By:	Date/Time:	
<i>C. S. Chean</i>		12/1/21	<i>Mervin R. Bowling #</i> <i>(485)</i>	12/2/21 09:20	
Form No: AL_subcoc					

# Appendix F

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## Soil Boring Logs




<b>BORING INFORMATION</b>		<b>BORING B102(MW)</b>  PAGE 1 of 1
NORTHING (ft): _____	EASTING (ft): _____	
GROUND SURFACE EL. (ft): 48.87	DATE START/END: 12/1/2021 - 12/1/2021	
VERT./HORIZ. DATUMS: NAVD 88/NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 20.0	DRILLER NAME: Zac Nadar	
LOGGED BY: J. Smalley	RIG TYPE: D-25	

<b>DRILLING INFORMATION</b>		
HAMMER TYPE: Automatic	CASING I.D./O.D.: NA/ 4 inch	CORE BARREL TYPE: NA
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D.: NA / NA
DRILLING METHOD: Drive and Wash		
WATER LEVEL DEPTHS (ft): 5.6 12/8/2021 7:16 am Measured in well.		

<b>ABBREVIATIONS:</b>	Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
40 5 10 15 30 20	5	S1	0 to 2	24/13	8-9-10-12	PID : S1 = 0.0ppm	SAND	S1 (0-13") SAND WITH GRAVEL AND SILT (SW): ~80% fine to coarse sand, ~15% subrounded gravel up to 1", ~5% non-plastic fines, moist, light brown.
		S2	2 to 4	24/14	9-11-10-5	PID : S2 = 0.1ppm	SILTY SAND	S2 (0-14") SILTY SAND WITH GRAVEL (SM): ~70% fine to coarse sand, ~20% non-plastic fines, ~10% subrounded gravel up to 1/4" moist, light brown/grey.
		S3	4 to 6	24/6	3-3-5-6	PID : S3 = 0.0ppm		S3 (0-6") SILTY SAND WITH GRAVEL (SM): Similar to S2(0-14").
		S4	6 to 8	24/10	3-3-4-3	PID : S4(0-3") = 0.0ppm PID : S4(3-10") = 0.1ppm	SANDY SILT	S4 (0-3") SILTY SAND WITH GRAVEL (SM): Similar to S2(0-14"). S4 (3-10") SILTY SAND WITH GRAVEL (SM): ~70% fine to coarse sand, ~25% non-plastic fines, ~5% subrounded gravel up to 1/4" moist, grey.
		S5	8 to 10	24/19	5-6-5-8	PID : S5 = 0.0ppm		S5 (0-17") SANDY SILT (ML): ~60% non-plastic fines, ~30% fine sand, ~10% subrounded gravel up to 1/2", wet, brown. S6 (0-6") SANDY SILT (ML): Similar to S5(0-17").
		S6	10 to 12	24/23	10-18-15-21	PID : S6(0-6") = 0.0ppm PID : S6(6-23") = 0.3ppm	SANDY SILT	S6 (6-23") SANDY SILT (ML): ~70% non-plastic fines, ~30% fine sand, moist, grey.
		S7	12 to 14	24/7	17-16-14-10	PID : S7 = 0.3ppm		S7 (0-7") SILTY SAND WITH GRAVEL (SM): ~70% fine to coarse sand, ~20% non-plastic fines, ~10% subrounded gravel up to 1" moist, brown.
		S8	14 to 16	24/16	9-9-14-13	PID : S8 = 0.1ppm	SANDY SILT	S8 (0-16") SILTY SAND WITH GRAVEL (SM): ~60% fine to medium sand, ~40% non-plastic fines, wet, brown.
		S9	16 to 18	24/24	17-30-41-42	PID : S9 = 0.3ppm		S9 (0-24") SILTY SAND WITH GRAVEL (SM): Similar to S8(0-16").
		S10	18 to 20	24/9	14-23-24-21	PID : S10 = 0.1ppm		
							END OF BORING 20'. COMPLETED AS MONITORING WELL.	

NOTES: Completed as monitoring well. PPM = Parts Per Million	PROJECT NAME: Bartlet Mall Frog Pond	
	CITY/STATE: Newburyport, Massachusetts	
	GEI PROJECT NUMBER: 2101333	


GEI WOBURN STD 5-NORTH-EAST-LAYER NAME BORING LOGS.GPJ 3/4/22

<b>BORING INFORMATION</b>		<b>BORING B103(MW)</b>
NORTHING (ft): _____	EASTING (ft): _____	
GROUND SURFACE EL. (ft): 49.25	DATE START/END: 12/2/2021 - 12/3/2021	
VERT./HORIZ. DATUMS: NAVD 88/NA	DRILLING COMPANY: Northern Drill Service, Inc.	
TOTAL DEPTH (ft): 46.0	DRILLER NAME: Zac Nadar	
LOGGED BY: J. Smalley	RIG TYPE: D-25	

<b>DRILLING INFORMATION</b>		
HAMMER TYPE: Automatic	CASING I.D./O.D.: NA/ 4 inch	CORE BARREL TYPE: NA
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D.: NA / NA
DRILLING METHOD: Drive and Wash		
WATER LEVEL DEPTHS (ft): $\nabla$ 34.0 12/8/2021 7:17 am Measured in well.		

<b>ABBREVIATIONS:</b>	Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description	
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD				
40 50 60 70 80 90 100	5	S1	0 to 2	24/15	1-2-2-3	PID : S1 = 0.0ppm	SAND	S1 (0-5") SILTY SAND (SM): ~70% fine to medium sand, ~30% non-plastic fines, moist, brown, contains roots.	
		S2	2 to 4	24/12	3-3-3-3	PID : S2 = 0.0ppm		S1 (5-15") SAND WITH SILT AND GRAVEL (SP): ~80% fine to medium sand, ~10% subrounded gravel up to 1", ~10% non-plastic fines, moist, brown.	
		S3	4 to 6	24/6	4-2-3-4	PID : S3 = 0.0ppm		S2 (0-12") SAND WITH SILT AND GRAVEL (SP): Similar to S1(5-15").	
	10	S4	6 to 8	24/7	2-4-5-4	PID : S4 = 0.0ppm		S3 (0-6") SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subrounded gravel up to 1", ~10% non-plastic fines, moist, light brown.	
		S5	8 to 10	24/8	5-5-3-5	PID : S5 = 0.0ppm		S4 (0-7") SAND WITH GRAVEL AND SILT (SW): Similar to S3(0-6").	
		S6	10 to 12	24/12	8-9-12-22	PID : S6 = 0.0ppm		S5 (0-8") SAND WITH GRAVEL AND SILT (SW): ~50% fine to coarse sand, ~40% subrounded gravel up to 1", ~10% non-plastic fines, moist, brown/grey.	
	15	S7	12 to 14	24/5	40-11-9-7	PID : S7(0-6") = 0.2ppm PID : S7(6-23") = 0.0ppm		S6 (0-12") SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subrounded gravel up to 1", ~10% non-plastic fines, moist, light brown.	
		S8	14 to 16	24/9	7-8-9-7	PID : S8 = 0.0ppm		S7 (0-3") SAND WITH GRAVEL AND SILT (SW): Similar to S6(0-12").	
		S9	16 to 18	24/11	6-5-7-9	PID : S9 = 0.0ppm		S7 (3-5") SAND WITH SILT (SW): ~90% fine to coarse sand, ~10% non-plastic fines, moist, light brown.	
	20	S10	18 to 20	24/13	5-6-7-9	PID : S10 = 0.1ppm		SILTY SAND	S8 (0-9") SILTY SAND (SM): ~85% fine to coarse sand, ~15% non-plastic fines, wet, light brown.
		S11	20 to 22	24/12	8-7-7-9	PID : S11 = 0.0ppm			S9 (0-11") SILTY SAND (SM): Similar to S8(0-9").
		S12	24 to	24/11	5-5-13-				S10 (0-13") SILTY SAND (SM): Similar to S8(0-9").
							S11 (0-12") SILTY SAND (SM): Similar to S8(0-9").		
							S12 (0-11") SILTY SAND (SM): Similar to S8(0-9").		

<b>NOTES:</b> Completed as monitoring well. PPM = Parts Per Million GEI WOBURN STD 5-NORTH-EAST-LAYER NAME BORING LOGS.GPJ 3/4/22	<b>PROJECT NAME:</b> Bartlet Mall Frog Pond <b>CITY/STATE:</b> Newburyport, Massachusetts <b>GEI PROJECT NUMBER:</b> 2101333	
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NORTHING (ft): \_\_\_\_\_  
 GROUND SURFACE EL. (ft): 49.25  
 VERT./HORIZ. DATUMS: NAVD 88/NA

EASTING (ft): \_\_\_\_\_  
 DATE START/END: 12/2/2021 - 12/3/2021  
 DRILLING COMPANY: Northern Drill Service, Inc.

**BORING  
 B103(MW)**  
 PAGE 2 of 2

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description	
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD				
			26		12	PID : S12 = 0.0ppm	SILTY SAND		
20	30	S13	29 to 31	24/16	11-14-20-21	PID : S13(0-5") = 0.0ppm PID : S13(5-16") = 0.0ppm	SAND	S13 (0-5") SAND WITH GRAVEL AND SILT (SW): ~50% fine to coarse sand, ~40% subrounded gravel up to 1/2", ~10% non-plastic fines, moist, light brown.  S13 (6-19") SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subrounded gravel up to 1", ~10% non-plastic fines, moist, light brown.	
	35	S14	34 to 36	24/19	19-12-13-10	PID : S14(0-6") = 0.0ppm PID : S14(6-19") = 0.0ppm			S14 (0-6") SAND WITH GRAVEL AND SILT (SW): ~50% fine to coarse sand, ~40% subrounded gravel up to 1.5", ~10% non-plastic fines, moist, light brown. S14 (6-19") SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subrounded gravel up to 1", ~10% non-plastic fines, moist, light brown.
10	40	S15	39 to 41	24/8	9-10-11-11	PID : S15 = 0.0ppm		S15 (0-8") SAND WITH GRAVEL AND SILT (SW): Similar to S14(6-19").	
	45	S16	44 to 46	24/12	9-9-13-13	PID : S16 = 0.0ppm		S16 (0-8") SAND WITH GRAVEL AND SILT (SW): Similar to S14(6-19").	
	0							END OF BORING 46'. COMPLETED AS MONITORING WELL.	
	50								
	55								

NOTES: Completed as monitoring well. PPM = Parts Per Million

PROJECT NAME: Bartlet Mall Frog Pond

CITY/STATE: Newburyport, Massachusetts  
 GEI PROJECT NUMBER: 2101333




GEI WOBURN STD 5-NORTH-EAST-LAYER NAME BORING LOGS.GPJ 3/4/22

<b>BORING INFORMATION</b>		<b>BORING</b>	
NORTHING (ft): _____	EASTING (ft): _____	<b>B104(MW)</b>	
GROUND SURFACE EL. (ft): 49.76	DATE START/END: 12/3/2021 - 12/3/2021		
VERT./HORIZ. DATUMS: NAVD 88/NA	DRILLING COMPANY: Northern Drill Service, Inc.		
TOTAL DEPTH (ft): 46.0	DRILLER NAME: Zac Nadar		
LOGGED BY: J. Smalley	RIG TYPE: D-25		
<b>PAGE 1 of 2</b>			

<b>DRILLING INFORMATION</b>			
HAMMER TYPE: Automatic	CASING I.D./O.D.: NA/ 4 inch	CORE BARREL TYPE: NA	
AUGER I.D./O.D.: NA / NA	DRILL ROD O.D.: NM	CORE BARREL I.D./O.D.: NA / NA	
DRILLING METHOD: Drive and Wash			
WATER LEVEL DEPTHS (ft): 35.3 12/8/2021 7:18 am Measured in well.			

<b>ABBREVIATIONS:</b>	Pen. = Penetration Length Rec. = Recovery Length RQD = Rock Quality Designation = Length of Sound Cores > 4 in / Pen., % WOR = Weight of Rods WOH = Weight of Hammer	S = Split Spoon Sample C = Core Sample U = Undisturbed Sample SC = Sonic Core DP = Direct Push Sample HSA = Hollow-Stem Auger	Qp = Pocket Penetrometer Strength Sv = Pocket Torvane Shear Strength LL = Liquid Limit PI = Plasticity Index PID = Photoionization Detector I.D./O.D. = Inside Diameter/Outside Diameter	NA, NM = Not Applicable, Not Measured Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.
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Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description	
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD				
40	5	S1	0 to 2	24/20	2-2-2-2	PID : S1(0-3") = 0.0ppm PID : S1(3-20") = 0.0ppm	SILTY SAND	S1 (0-3") SILTY SAND WITH GRAVEL (SM): ~70% fine to medium sand, ~20% non-plastic fines, ~10% subrounded gravel up to 1/4", moist, brown, contains roots. S1 (3-20") SILTY SAND WITH GRAVEL (SM): ~70% fine to coarse sand, ~25% non-plastic fines, ~5% subrounded gravel up to 1/4", moist, light brown. S2 (0-19") SILTY SAND WITH GRAVEL (SM): Similar to S1(3-20"). S3(0-11") SILTY SAND WITH GRAVEL (SM): Similar to S1(3-20"). S4 (0-15") SILTY SAND WITH GRAVEL (SM): Similar to S1(3-20"). S4 (15-17") SILTY SAND WITH GRAVEL (SM): ~50% fine sand, ~30% non-plastic fines, ~20% subangular gravel up to 1/4", moist, red/brown. S5 (0-10") SILTY SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subangular gravel up to 1", ~10% non-plastic fines, wet, light brown. S6 (0-1") SILTY SAND WITH GRAVEL AND SILT (SW): Similar to S5(0-10"). S7 (0-19") SILTY SAND WITH GRAVEL AND SILT (SW): Similar to S5(0-10"). S7 (19-23") SILTY SAND WITH GRAVEL (SM): ~70% fine sand, ~20% non-plastic fines, ~10% subangular gravel up to 1/2", moist, brown. S8 (0-9") SAND WITH GRAVEL AND SILT (SW): ~70% fine to coarse sand, ~20% subangular gravel up to 1.5", ~10% non-plastic fines, moist, light brown. S9 (0-7") SAND WITH GRAVEL AND SILT (SW): Similar to S8(0-9"). S10 (0-10") SAND WITH GRAVEL AND SILT (SW): Similar to S8(0-9").	
		S2	2 to 4	24/19	4-5-6-6	PID : S2 = 0.0ppm			
		S3	4 to 6	24/11	6-8-10-10	PID : S3 = 0.0ppm			
	10	6	S4	6 to 8	24/17	8-7-9-22			PID : S4(0-15") = 0.0ppm PID : S4(15-17") = 0.0ppm
			S5	8 to 10	24/10	9-9-8-5			PID : S5 = 0.0ppm
		10	S6	10 to 12	24/1	8-10-11-11			PID : S6 = 0.0ppm
			S7	12 to 14	24/23	10-8-10-14			PID : S7(0-19") = 0.0ppm PID : S7(19-23") = 0.0ppm
		15	S8	14 to 16	24/9	10-12-13-16			PID : S8 = 0.0ppm
			S9	16 to 18	24/7	15-20-24-24			PID : S9 = 0.0ppm
			S10	18 to 20	24/10	25-30-21-15			PID : S10 = 0.2ppm
		20							PID : S11 = 0.1ppm
S11	24 to		24/18	12-19-		SAND	S11 (0-18") SILTY SAND (SM): Similar to S8(0-9").		

NOTES: Completed as monitoring well. PPM = Parts Per Million	PROJECT NAME: Bartlet Mall Frog Pond
	CITY/STATE: Newburyport, Massachusetts
	GEI PROJECT NUMBER: 2101333
	

GEI WOBURN STD 5-NORTH-EAST-LAYER NAME BORING LOGS.GPJ 3/4/22

NORTHING (ft): \_\_\_\_\_  
 GROUND SURFACE EL. (ft): 49.76  
 VERT./HORIZ. DATUMS: NAVD 88/NA

EASTING (ft): \_\_\_\_\_  
 DATE START/END: 12/3/2021 - 12/3/2021  
 DRILLING COMPANY: Northern Drill Service, Inc.

**BORING  
 B104(MW)**  
 PAGE 2 of 2

Elev. (ft)	Depth (ft)	Sample Information				Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD			
			26		25-25	PID : S12(0-5") = 0.1ppm PID : S12(5-13") = 0.1ppm		
20	30	S12	29 to 31	24/13	21-39-38-25	PID : S13 = 0.1ppm	SILTY SAND	S12 (0-5") SILTY SAND (SM): Similar to S8(0-9"). S12 (5-13") SILTY SAND WITH GRAVEL (SM): ~60% fine sand, ~30% nonplastic fines, ~10% subrounded gravel up to 1", moist, brown.
	35	S13	34 to 36	24/11	12-10-10-10	PID : S14 = 0.1ppm	SAND	S13 (0-5") SAND WITH GRAVEL AND SILT (SW): ~60% fine to coarse sand, ~30% subrounded gravel up to 1.5", ~10% non-plastic fines, moist, light brown.
10	40	S14	39 to 41	24/5	13-14-20-23	PID : S15 = 0.0ppm	SANDY SILT	S14 (0-5") SANDY SILT (ML): ~80% nonplastic fines, ~20% fine sand, moist, light brown.
	45	S15	44 to 46	24/15	16-17-23-21	PID : S16 = 0.2ppm	SILTY SAND	S15 (0-15") SILTY SAND (SM): ~60% fine sand, ~40% non-plastic fines, wet, light brown.
								END OF BORING 46'. COMPLETED AS MONITORING WELL.

GEI WOBURN STD 5-NORTH-EAST-LAYER NAME BORING LOGS.GPJ 3/4/22

NOTES: Completed as monitoring well. PPM = Parts Per Million

PROJECT NAME: Bartlet Mall Frog Pond

CITY/STATE: Newburyport, Massachusetts  
 GEI PROJECT NUMBER: 2101333



## Appendix G

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### Monitoring Well Installation Logs

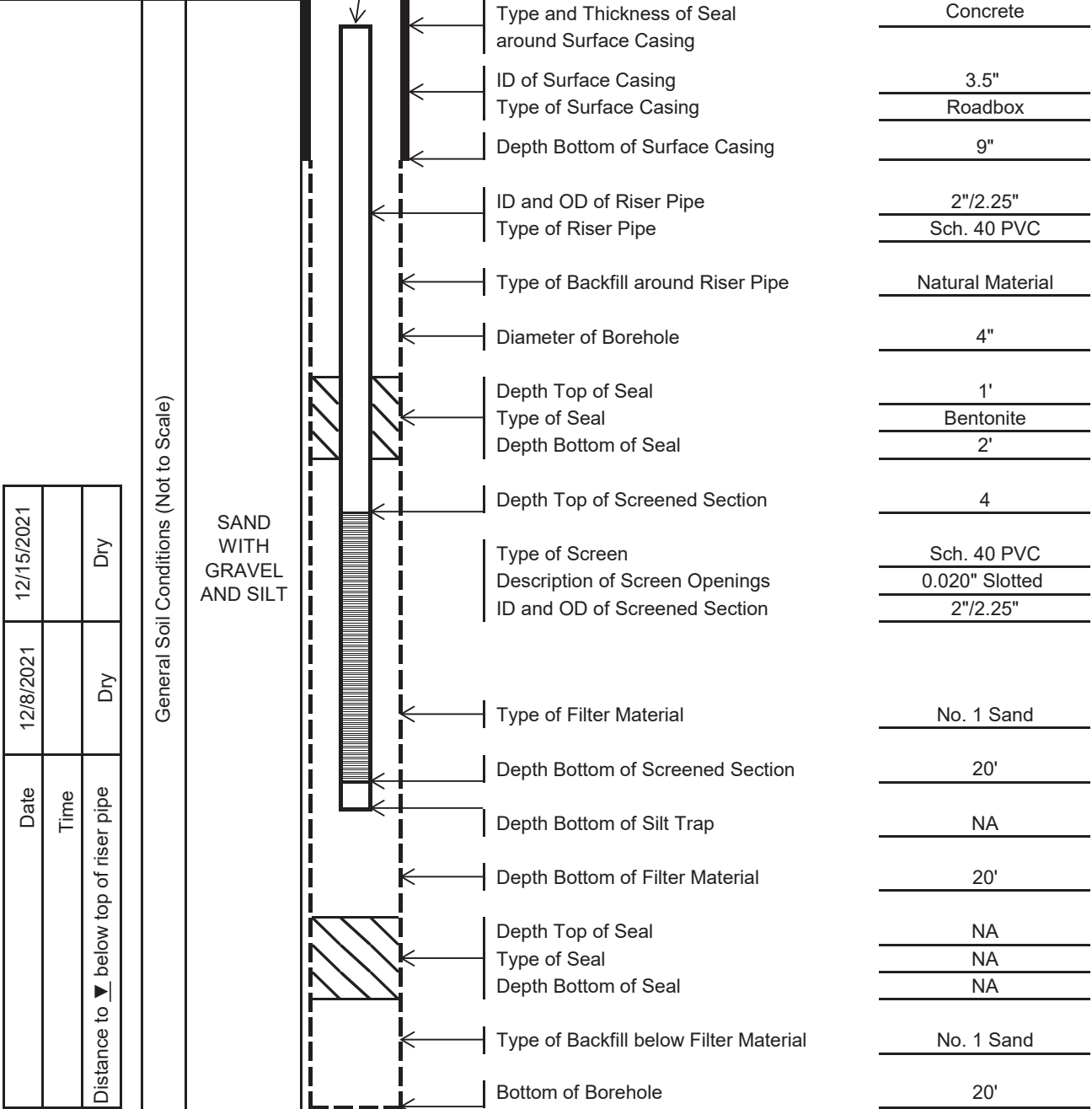
# Groundwater Well Installation Log

## B101(MW)

**Project** Bartlet Mall Frog Pond  
**City / Town** Newburyport, Massachusetts  
**Client** Town of Newburyport  
**Contractor** Northern Drill Service, Inc.  
**Driller** Z. Nader **GEI Rep.** J. Smalley

**GEI Proj. No.** 2101333  
**Location** Eastern corner of pond  
**Install Date** December 1, 2021

**Survey Datum:** NAVD88  
**Ground Elevation:** 49.54



**Notes:**



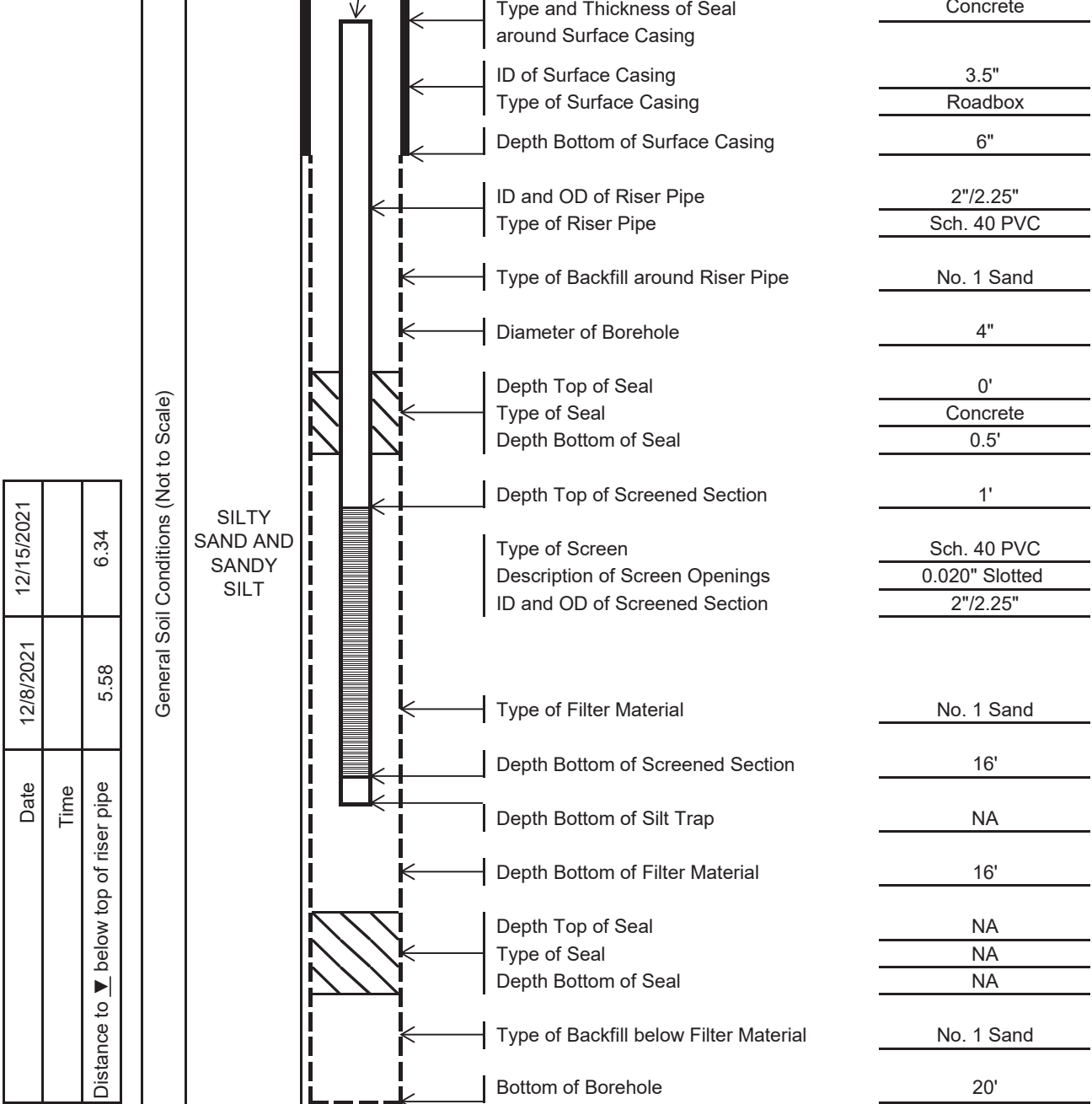
# Groundwater Well Installation Log

## B102(MW)

**Project** Bartlet Mall Frog Pond  
**City / Town** Newburyport, Massachusetts  
**Client** Town of Newburyport  
**Contractor** Northern Drill Service, Inc.  
**Driller** Z. Nader **GEI Rep.** J. Smalley

**GEI Proj. No.** 2101333  
**Location** Adjacent to court  
house  
**Install Date** December 1, 2021

**Survey Datum:** NAVD88 Length of Surface Casing above Ground Flushmount  
**Ground Elevation:** 48.87 Dist. Top of Surf. Casing to Top of Riser Pipe 3"



**Notes:**



# Groundwater Well Installation Log

## B103(MW)

**Project** Bartlet Mall Frog Pond  
**City / Town** Newburyport, Massachusetts  
**Client** Town of Newburyport  
**Contractor** Northern Drill Service, Inc.  
**Driller** Z. Nader **GEI Rep.** J. Smalley

**GEI Proj. No.** 2101333  
**Location** Southwestern side  
of pond  
**Install Date** December 3, 2021

**Survey Datum:** NAVD88 Length of Surface Casing above Ground Flushmount  
**Ground Elevation:** 49.25 Dist. Top of Surf. Casing to Top of Riser Pipe 3"

<table border="1"> <tr> <td>12/15/2021</td> <td></td> <td>34</td> </tr> <tr> <td>12/8/2021</td> <td></td> <td>34</td> </tr> <tr> <td>Date</td> <td>Time</td> <td>Distance to ▼ below top of riser pipe</td> </tr> </table>	12/15/2021		34	12/8/2021		34	Date	Time	Distance to ▼ below top of riser pipe	General Soil Conditions (Not to Scale)  SAND WITH GRAVEL AND SILT		Type and Thickness of Seal around Surface Casing	Concrete
	12/15/2021		34										
	12/8/2021		34										
	Date	Time	Distance to ▼ below top of riser pipe										
	ID of Surface Casing	3.5"											
	Type of Surface Casing	Roadbox											
	Depth Bottom of Surface Casing	9"											
	ID and OD of Riser Pipe	2"/2.25"											
	Type of Riser Pipe	Sch. 40 PVC											
	Type of Backfill around Riser Pipe	Natural Material											
	Diameter of Borehole	4"											
	Depth Top of Seal	22'											
	Type of Seal	Bentonite											
	Depth Bottom of Seal	24'											
	Depth Top of Screened Section	26'											
Type of Screen	Sch. 40 PVC												
Description of Screen Openings	0.020" Slotted												
ID and OD of Screened Section	2"/2.25"												
Type of Filter Material	No. 1 Sand												
Depth Bottom of Screened Section	46'												
Depth Bottom of Silt Trap	NA												
Depth Bottom of Filter Material	46'												
Depth Top of Seal	NA												
Type of Seal	NA												
Depth Bottom of Seal	NA												
Type of Backfill below Filter Material	No. 1 Sand												
Bottom of Borehole	46'												

**Notes:**



# Groundwater Well Installation Log

## B104(MW)

**Project** Bartlet Mall Frog Pond  
**City / Town** Newburyport, Massachusetts  
**Client** Town of Newburyport  
**Contractor** Northern Drill Service, Inc.  
**Driller** Z. Nader **GEI Rep.** J. Smalley

**GEI Proj. No.** 2101333  
**Location** Northern corner of pond  
**Install Date** December 3, 2021

<b>Survey Datum:</b> <u>NAVD88</u>	Length of Surface Casing above Ground	<u>Flushmount</u>								
<b>Ground Elevation:</b> <u>49.76</u>	Dist. Top of Surf. Casing to Top of Riser Pipe	<u>3"</u>								
<table border="1"> <tr> <td>12/15/2021</td> <td>35.39</td> </tr> <tr> <td>12/8/2021</td> <td>35.31</td> </tr> <tr> <td>Date</td> <td>Time</td> </tr> <tr> <td colspan="2">Distance to ▼ below top of riser pipe</td> </tr> </table> <p>General Soil Conditions (Not to Scale)</p> <p>SAND WITH GRAVEL AND SILT</p>	12/15/2021	35.39	12/8/2021	35.31	Date	Time	Distance to ▼ below top of riser pipe		Type and Thickness of Seal around Surface Casing	<u>Concrete</u>
	12/15/2021	35.39								
	12/8/2021	35.31								
	Date	Time								
	Distance to ▼ below top of riser pipe									
	ID of Surface Casing	<u>3.5"</u>								
	Type of Surface Casing	<u>Roadbox</u>								
	Depth Bottom of Surface Casing	<u>9"</u>								
	ID and OD of Riser Pipe	<u>2"/2.25"</u>								
	Type of Riser Pipe	<u>Sch. 40 PVC</u>								
	Type of Backfill around Riser Pipe	<u>Natural Material</u>								
	Diameter of Borehole	<u>4"</u>								
	Depth Top of Seal	<u>22'</u>								
	Type of Seal	<u>Bentonite</u>								
	Depth Bottom of Seal	<u>24'</u>								
Depth Top of Screened Section	<u>16'</u>									
Type of Screen	<u>Sch. 40 PVC</u>									
Description of Screen Openings	<u>0.010" Slotted (16-26')</u> <u>0.020" Slotted (26-46')</u>									
ID and OD of Screened Section	<u>2"/2.25"</u>									
Type of Filter Material	<u>No. 1 Sand</u>									
Depth Bottom of Screened Section	<u>46'</u>									
Depth Bottom of Silt Trap	<u>NA</u>									
Depth Bottom of Filter Material	<u>46'</u>									
Depth Top of Seal	<u>NA</u>									
Type of Seal	<u>NA</u>									
Depth Bottom of Seal	<u>NA</u>									
Type of Backfill below Filter Material	<u>No. 1 Sand</u>									
Bottom of Borehole	<u>46'</u>									

**Notes:**





# Appendix H

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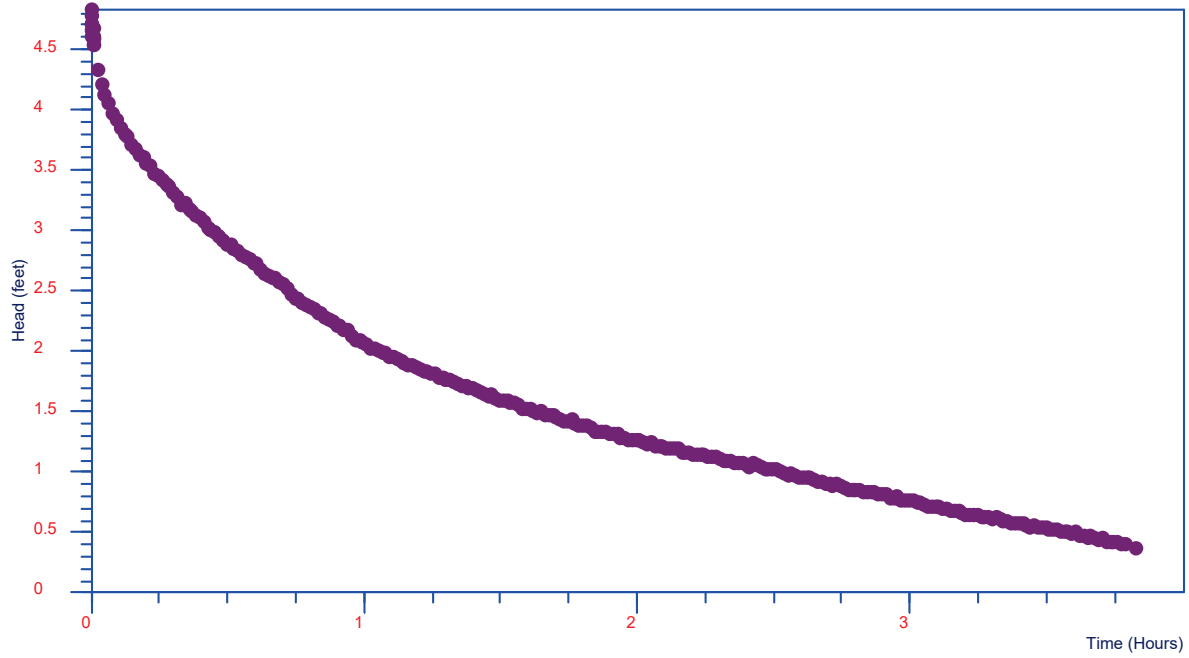
## Hydraulic Conductivity Testing Results

### Rising Head Test 1 12/15/21

### Arithmetic Graph

Bartlet Mall Frog Pond Newburyport, MA

B102(MW)



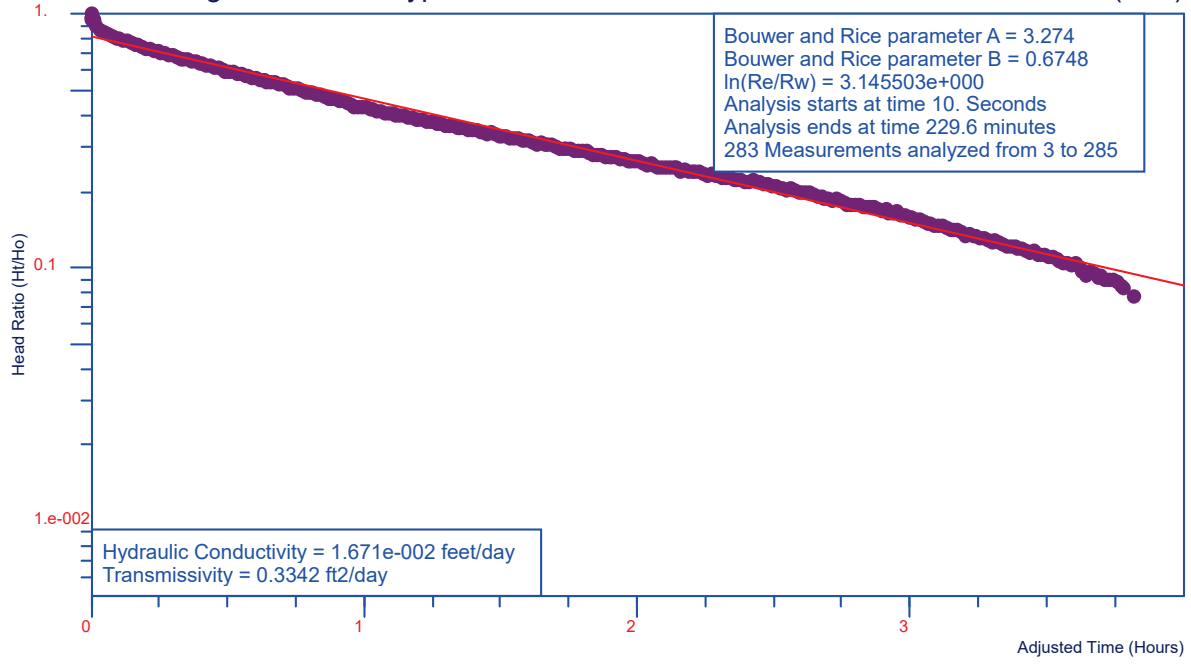
Project Number: 2101333 for Newburyport Parks Commission  
Analysis by Starpoint Software

### Rising Head Test 1 12/15/21

### Bouwer and Rice Graph

Bartlet Mall Frog Pond Newburyport, MA

B102(MW)



Project Number: 2101333 for Newburyport Parks Commission  
Analysis by Starpoint Software

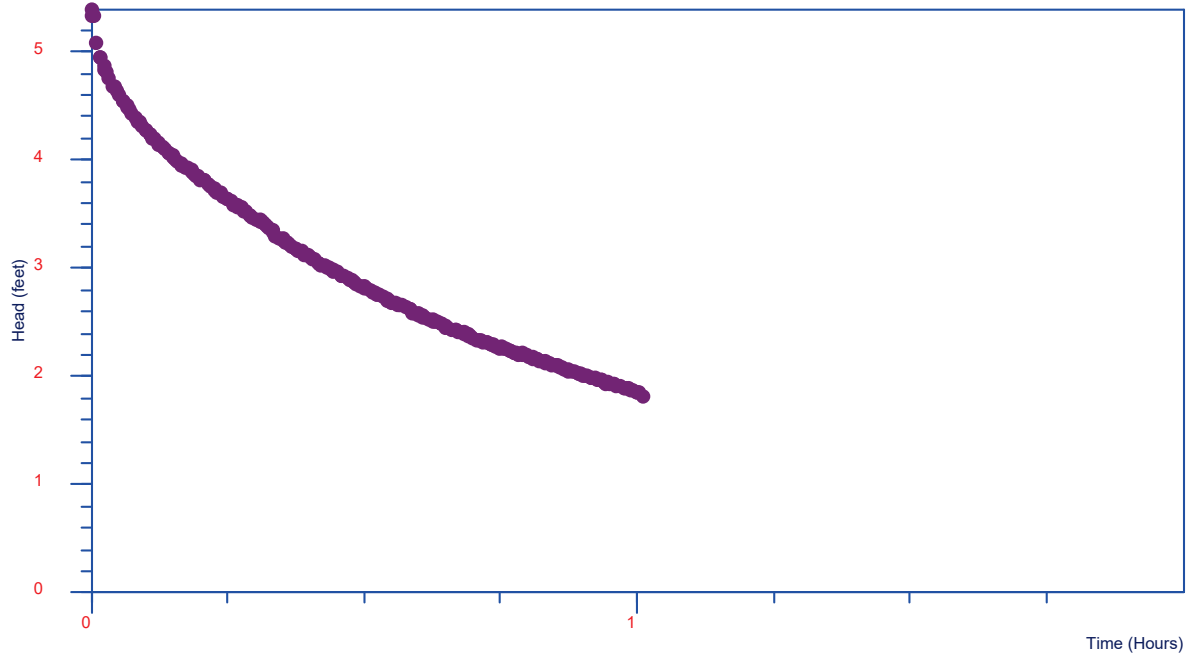
Ho is 4.82 feet at 10. Seconds

### Rising Head Test 2 12/15/21

### Arithmetic Graph

Bartlet Mall Frog Pond Newburyport, MA

B102(MW)



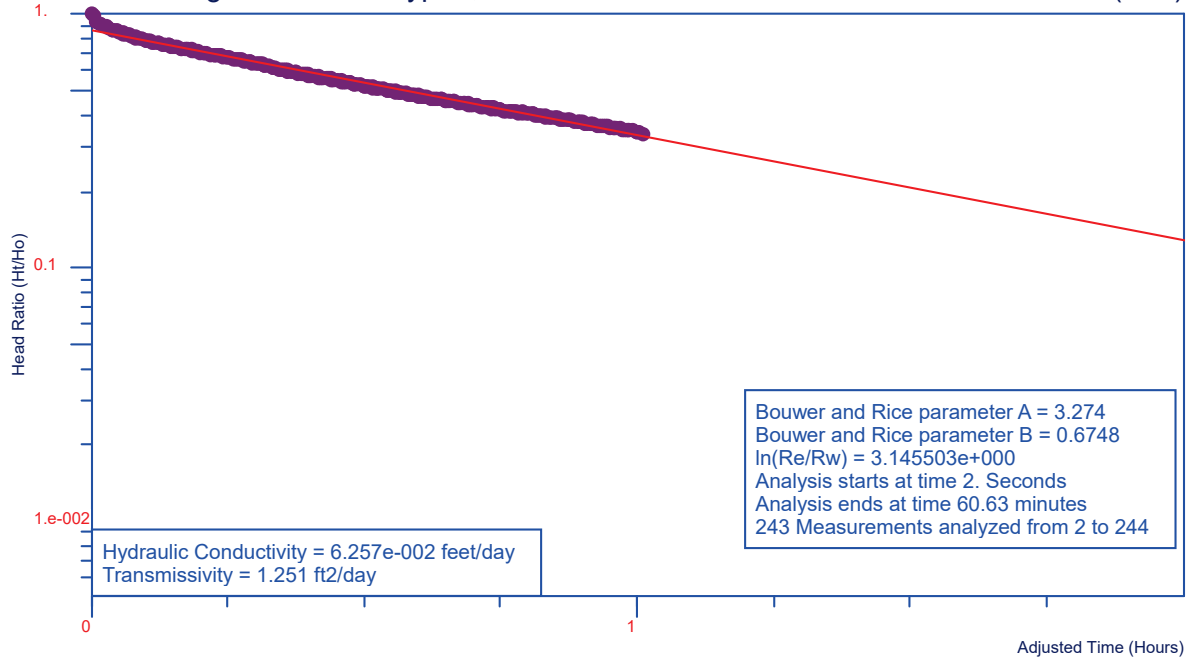
Project Number: 2101333 for Newburyport Parks Commission  
Analysis by Starpoint Software

### Rising Head Test 2 12/15/21

### Bouwer and Rice Graph

Bartlet Mall Frog Pond Newburyport, MA

B102(MW)



Project Number: 2101333 for Newburyport Parks Commission  
Analysis by Starpoint Software

Ho is 5.378 feet at 2. Seconds



