WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

November 27, 2023
Hop Brook Protection Association
PO Box 707
Sudbury, MA 01776
Sent via email: jeff@hopbrook.org

Re: Hop Brook Ponds (Stearns Millpond, Carding Millpond, and Grist Millpond), Sudbury, MA – 2023 Year End Report – DEP File #301-1283

Dear Hop Brook Protection Association Members:

It is our pleasure to present a year end summary report to The Hop Brook Protection Association regarding the 2023 Aquatic Management Program at the Hop Brook Ponds. The Hop Brook waterbodies include Stearns Millpond, Carding Millpond, and Grist Millpond, all located in Sudbury, MA.

Historically, Hop Brook Protection Association has battled invasive species water chestnut *(Trapa natans)* within all three waterbodies: Stearns Millpond, Carding Millpond, and Grist Millpond. The goal of the 2023 program was to manage the invasive water chestnut population while examining basic water quality through a proactive monitoring schedule. This would be accomplished by implementing an aquatic management program that focused around performing all applicable tasks, including planning, permitting, surveys, treatments, and reporting.

During each visit to the ponds, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Additionally, dissolved oxygen (DO) and temperature readings were collected throughout the season using a calibrated YSI meter with optical sensor (pictured in Figure 2). Dissolved oxygen is the amount of oxygen in water that is available to aquatic organisms. DO is necessary to support fish spawning, growth, and activity. Tolerance varies by species, please see the figure provided for a general range of fish tolerance (Source: epa.gov). Dissolved oxygen can be affected by many outside factors, such as: temperature, time of day, and pollution. Dissolved oxygen levels are typically lowest early in the morning. Healthy water should generally have concentrations of about 6.5-8+ mg/L (reference Figure 1). Water clarity was also assessed using a Secchi disk, as applicable (Secchi disk pictured in Figure 2). A Secchi disk is a disk with alternating black and white quadrants. It is lowered into the water of a pond or lake until it can no longer be seen by the observer. This depth of disappearance, called the Secchi depth, is a measurement of the transparency of the water. All readings are included in the tables throughout this report.

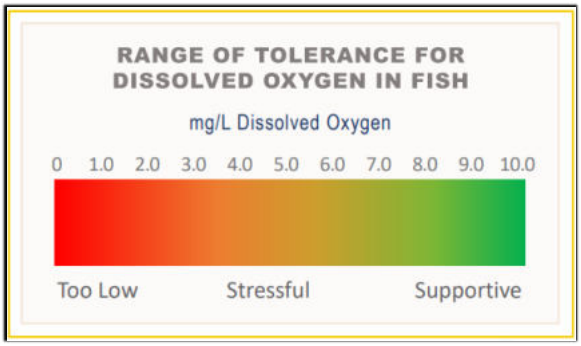

Figure 1: Dissolved oxygen table

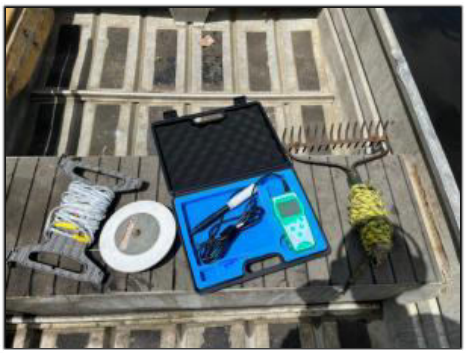
Figure 2: Equipment and meters utilized during each site visit

All permitting, treatments, and survey tasks were completed without issue and at the proper times. The tables throughout the report provide the specific dates of each task. Below the table, each visit/task performed is described in additional detail.

Stearns Millpond

Stearns Millpond (Figure 3) is the northernmost waterbody of the three Hop Brook Ponds and is approximately 16.8 acres. This Pond is primarily surrounded by woodlands with developed properties scattered on both the northern and southern shorelines. The inlet (which is Hop Brook) to Stearns Millpond is found along the southwestern point. Water flows from west to east within the waterbody, with the outlet noted at the northeastern point (adjacent to the public parking lot). This outlet is a constructed dam that flows back into Hop Brook. The Pond is fairly shallow, with an average depth of roughly 2.5-3 feet. Access to this waterbody is gained from the public parking lot off of Dutton Road.

Figure 3: Stearns Millpond - Sudbury, MA

Summary Of 2023 Management Activities

Date	Task/Description
June 13, 2023	A pre-management survey was performed to document baseline conditions of the Pond, note the current vegetation species/densities present, and to guide future 2023 management; Water samples were collected
June 30, 2023	An interim survey was completed to confirm treatment areas; The initial herbicide treatment was performed
July 17, 2023	An interim survey was conducted to evaluate the effectiveness of the previous treatment; The follow-up herbicide treatment was completed
August 9, 2023	An interim survey was conducted to evaluate the effectiveness of the previous treatment; The final herbicide treatment was completed
September 6, 2023	A post-management survey was completed to evaluate the effectiveness of the previous treatment and the overall 2023 Aquatic Management Program, in addition to helping guide recommendations for 2024; Water samples were collected

June 13, 2023 - Pre-Management Survey / Water Samples Collected

On June 13th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a sight visit to Stearns Millpond. The visit consisted of conducting a survey and collecting water quality data. Conditions during the visit were warm and partly cloudy.

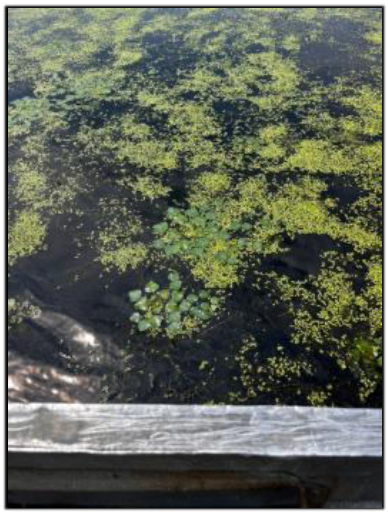

Figure 4: Water chestnut mixed throughout native pondweeds

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and ArcGIS Field Maps and external GPS. Two invasive species were documented during the survey, water chestnut (Figure 4) and curly-leaf pondweed (*Potamogeton crispus)*. These species were found scattered throughout the Pond in trace to moderate densities. It is important to note that the dots (GPS points) representing water chestnut on the attached map indicate individual plants or extremely small areas, rather than large populations. These populations were isolated from one another. Several native species (Figure 4) were documented during the survey including elodea (*Elodea canadensis)*, ribbon-leaf pondweed (*Potamogeton epihydrus)*, thin-leaf pondweed (*Potamogeton pusillus)*, duckweed (*Lemnoideae)*, watermeal (*Wolffia)*, and waterlilies (*Nymphaeaceae)*. Elodea, ribbon-leaf pondweed, thin-leaf pondweed, and duckweed were the most dominant native species in the Pond. Filamentous algae and epiphytic algae were observed with the epiphytic algae primarily documented on native species. The pH was 8, which is within standard range for fresh water and considered neutral leaning towards basic. All other required water samples were collected from the Pond and were preserved and transported to Alpha Labs for analysis. The Secchi disk reading resulted in 2 feet, 9 inches (to the bottom).

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (℃)**	**Surface DO (mg/L)**
Surface	23.9	9.58
1	23.3	8.78
2	23.0	8.59
Bottom	22.1	7.76

<u>June 30, 2023 – Survey / Initial Herbicide Treatment</u>

On June 30th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin, and Aquatic Biologist, Scott Conrade made a visit to Stearns Millpond. The visit consisted of performing a brief survey, collecting water quality data, and conducting a treatment. Conditions during the visit were partly sunny and calm.

Figure 5: Overlooking Stearns Millpond during the site visit

Upon arrival, a brief survey was conducted in order to confirm potential treatment areas. During the survey, water chestnut could be seen in various locations in low densities throughout the Pond. Portions of the water chestnut population were covered and/or surrounded by duckweed and filamentous algae (duckweed, algae, and other various natives surfacing in Figure 5), thus hard to see. Elodea was also present in high densities throughout the Pond mixed with topped out throughout most of it. Additionally, curly leaf pondweed was present and mature at the time of the visit. Stearns Millpond also has a large population of bluegill and other sunfish species, as well as largemouth bass. This is typical of this type of

ecosystem in the northeast; however, there were some large specimens observed during the visit. Along with the fish species, eastern painted turtles and snapping turtles were also observed in the Pond. This treatment took more time than the other two waterbodies due to the lower density, thus seeking out patches, plants, and hard to find water chestnut mixed within other species. Other vegetation species noted during the survey included cattails (*Typha sp.),* coontail (*Ceratophyllum demersum),* watermeal, Phragmites (*Phragmites australis)*, Japanese knotweed (*Reynoutria japonica)*, and waterlilies.

A treatment was conducted for the control of water chestnut. The liquid herbicide, Clearcast (imazamox), was applied using a small jon boat, equipped with a calibrated pump, which is used to target the water chestnut plants via foliar application methodology. This method allows for even and precise coverage. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting. All required pre-treatment information and documents were also sent to Sudbury Conservation Commission.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (℃)**	**Surface DO (mg/L)**
Surface	25.3	8.81
1	24.8	8.43
2	23.7	7.43
Bottom	23.0	6.64

July 17, 2023 - Survey / Follow-up Herbicide Treatment

On July 17th, Senior Environmental Scientist, James Lacasse, made a visit to Stearns Millpond. The site visit consisted of performing a post-treatment survey, collecting water quality data, and completing a treatment. Conditions during the visit were sunny and calm.

Figure 6: Improved conditions since the previous treatment

Upon arrival at the site, a brief visual survey was conducted using visual observation. The purpose of the brief survey was to document the success of the previous treatment and to guide the current treatment, therefore a throw-rake was not utilized. A more in-depth survey was conducted later in the season. Conditions had significantly improved since the previous treatment (see Figure 6). Clarity was reasonably high (to the bottom or to the vegetation growth throughout the Pond) so in addition to species on the surface, several submerged plants were also documented including curly-leaf pondweed, elodea, coontail, watermeal, duckweed, waterlilies, and filamentous algae. The majority of the water chestnut was scattered in trace to sparse densities (illustrated in Figure 7), occasionally found in moderate densities in a small number of areas. The densest areas of water chestnut included the eastern cove and one area within the

middle of the Pond. Other than those areas, the plants were more scattered. It is important not to confuse native growth at the surface with water chestnut growth, as it can be easily mistaken from looking at a distance. Seeds were noted just starting to form on the water chestnut plants, with portions of the population not yet forming seeds. The water level was slightly higher than average due to the previous heavy rainfall, which did not affect the treatment as the water chestnut was on the surface. A handful of water chestnut plants were documented growing within the water column. Based on our observations, we scheduled a kayak survey for July 27th to document the success of the program thus far. Based on this survey, we would determine if a third treatment was necessary to gain the desired level of control.

Figure 7: Water chestnut mixed with filamentous algae and native pondweeds

During the July 17th visit, a follow-up treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	24.0	7.98
1	24.0	7.42
2	23.2	6.54
Bottom	23.0	6.21

August 9, 2023 - Survey / Final Herbicide Treatment

Figure 8: Water and Wetland conducting the final treatment at Stearns Millpond

On August 9th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin completed a site visit to Stearns Millpond. The visit consisted of performing a survey, collecting basic water quality data, and completing a treatment. Conditions during the visit were sunny and calm.

The purpose of this visit was to provide an additional follow-up treatment to target remaining water chestnut. Overall, the previous treatments greatly reduced the densities of water chestnut in all three Ponds (see improved conditions in Figure 8 at Stearns Millpond). The treatments do not affect watermeal, algae, or duckweed, which remained at the surface (Moreso within Carding Millpond and Grist Millpond). Despite great control from the previous treatments, we

added the additional treatment at no cost. The rationale was to absolutely ensure the level of control that the Town of Sudbury, Hop Brook Protection Association, and Water & Wetland expect. Each of the Ponds were spot treated for remaining water chestnut control. Stearns Millpond contained the least amount of water chestnut (illustrated in Figure 8) followed by Grist Millpond. Carding Millpond contained some areas with a few remaining "lanes" of water chestnut, but overall, it was very scattered. We did receive some feedback on areas from Hop Brook Protection Association. These were treated in addition to any additional remaining chestnut. The boat was washed in between Ponds.

During the site visit, the final treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (°C)**	**DO (mg/L)**
Surface	24.8	8.64

<u>September 6, 2023 - Post-Management Survey / Water Samples Collected</u>

On September 6th, Senior Environmental Scientist, James Lacasse, made a visit to Stearns Millpond. The visit consisted of performing the post-management survey and collecting water quality data in addition to water samples. Conditions during the visit were sunny and calm.

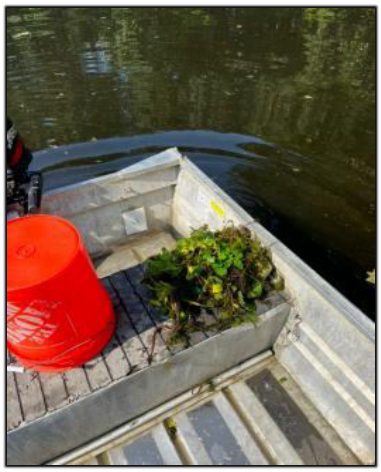

Figure 9: Remaining water chestnut hand-pulled during the site visit

The treatment program at Stearns Millpond worked excellent as minimal water chestnut was documented throughout the survey (see excellent conditions within Figure 10 below). Water chestnut was noted in trace, scattered densities (in isolated populations). The majority of the water chestnut noted was hand-pulled and properly disposed of (pictured in Figure 9). Portions of the water chestnut population present was already dead (floating on the surface), as the plants were not attached to a stem/root. The most prevalent species observed was Elodea as it was found in varying densities ranging from sparse to dense throughout the Pond. Coontail was the next most prevalent species. Filamentous algae was documented throughout approximately 70-80% of the Pond both on the bottom, throughout the water column, and forming a mat on the surface. Epiphytic algae was also documented in roughly 25% of the vegetation populations. Scattered floating water chestnut seeds were observed throughout the Pond, primarily towards the outlet. Curly-leaf pondweed was also noted (primarily within the outlet cove). Other species documented during the survey included watermeal, duckweed, cattails, phragmites, floating-leaf pondweed (*Potamogeton natans),* purple loosestrife

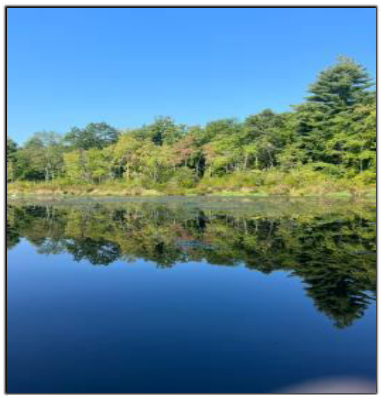

Figure 10: Post-management survey at Stearns Millpond - great conditions documented

(*Lythrum salicaria),* and waterlilies. Clarity was to the bottom or to the vegetation throughout the Pond. A family of Swans was documented during the survey.

Attached is a map of the invasive species. The blue dots signify water chestnut and typically represent just a plant or two. Most were windblown to a shoreline and were not attached to a root or stem and were not producing seeds.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (℃)**	**DO (mg/L)**
Surface	26.0	6.29
1	26.1	6.16
2	24.8	5.49

Carding Millpond

Carding Millpond (Figure 11) is found in the middle of Grist Millpond and Stearns Millpond. This waterbody is south of Stearns Millpond, and northeast of Grist Millpond. Carding Millpond is approximately 42.8 acres, including two islands within the middle of the Pond. The northern island is roughly 0.85 acres while the southern island (the larger island) is about 2.4 acres. Access to Carding Millpond was gained from a boat launch on the northern shoreline. The road to the boat launch is found off Dutton Road, which runs along the western shoreline. The Pond is surrounded by sparse woodlands with a handful of developed properties/fields mixed noted on each shoreline. Two inlets are noted within the Pond, one in each southern basin. The primary inlet is found within the southwestern basin. The outlet within the Pond is along the northern shoreline, which flows into Hop Brook.

Figure 11: Carding Millpond - Sudbury, MA

Summary Of 2023 Management Activities

Date	Task/Description
June 13, 2023	A pre-management survey was performed to document baseline conditions of the Pond, note the current vegetation species/densities present, and to guide future 2023 management; Water samples were collected
June 30, 2023	A survey was completed to confirm treatment areas; The initial herbicide treatment was performed
July 17, 2023	An interim survey was conducted to evaluate the effectiveness of the previous treatment; The follow-up herbicide treatment was completed
August 9, 2023	An interim survey was conducted to evaluate the effectiveness of the previous treatment; The final herbicide treatment was completed

September 6, 2023	A post-management survey was completed to evaluate the effectiveness of the previous treatment and the overall 2023 Aquatic Management Program, in addition to helping guide recommendations for 2024; Water samples were collected

June 13, 2023 - Pre-Treatment Survey / Water Samples Collected

Figure 12: Dense pondweeds and filamentous algae documented during the

On June 13th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a sight visit to Carding Millpond. The visit consisted of conducting a survey and collecting water quality data. Conditions during the visit were warm and partly cloudy.

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and ArcGIS Field Maps and external GPS. A large majority of visible green vegetation from shoreline may have appeared to be water chestnut; however, upon closer inspection, it was actually a variety of different aquatic species (see Figure 12). These species include watermeal, duckweed, filamentous/epiphytic algae, elodea, and waterlilies. Other species documented during the survey include curly leaf pondweed, thin-leaf pondweed, and coontail. The epiphytic algae was primarily on the thin-leaf pondweed populations, which were present in varying densities. Filamentous algae was found in dense mats (Figure 12), as well as in the water column. There were scattered densities of water chestnut, ranging from sparse to dense. A majority of the individual plants were surrounded by watermeal and duckweed, making the water chestnut appear more widespread. The water chestnut was most dense in the southern coves, as well as around the island, and was accompanied by floating seeds (see attached map).

The pH was 7.7, which is within the standard range for freshwater and considered neutral. The water clarity was also assessed, and deemed as above average, as visibility was to the bottom of the Pond. The Secchi reading was 5 feet, 6 inches. All other required water samples were collected from the Pond and were preserved and transported to Alpha Labs for analysis.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	24.3	8.93
1	23.8	8.62
2	23.5	8.80
3	23.2	8.72
4	21.9	8.65
Bottom	21.6	8.37

June 30, 2023 – Survey / Initial Herbicide Treatment

On June 30th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin, made a visit to Carding Millpond. The visit consisted of performing a brief survey, collecting basic water quality data, and completing a treatment. Conditions during the visit were sunny with a slight breeze.

Upon arrival, a brief survey was conducted to confirm treatment areas. Areas of water chestnut were expanded when compared to those of 2022. The water chestnut was extremely dense in areas (see Figure 13). Additionally, an odor was noticed in certain sections of the Pond. Vegetation species noted during the brief survey included elodea, watermeal, filamentous algae, duckweed, waterlilies, thin-leaf pondweed, coontail, and curly-leaf pondweed. Vegetation was documented surfacing throughout the majority of the waterbody (illustrated in Figure 13).

Figure 13: Water and Wetland conducting a treatment via airboat

A treatment was conducted for the control of water chestnut. The liquid herbicide, Clearcast (imazamox), was applied using the most appropriate boat, equipped with a calibrated pump, which is used to target the water chestnut plants via foliar application methodology. This method allows for even and precise coverage. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting. All required pre-treatment information and documents were also sent to Sudbury Conservation Commission.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	25.5	8.30
1	25.3	7.71
2	24.0	5.70
3	22.6	4.30
4	21.6	3.37
Bottom	21.4	3.32

July 17, 2023 - Survey / Follow-up Herbicide Treatment

Figure 14: Overlooking Carding Millpond during the treatment - dense pondweeds and algae throughout the waterbody

On July 17th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin, made a visit to Carding Millpond. The visit consisted of performing a survey, collecting basic water quality data, and completing a follow-up treatment. Conditions during the visit were partly sunny with a slight breeze.

Upon arrival at the site, a brief survey was conducted using visual observation. The purpose of the brief survey was to document the success of the previous treatment and to guide the current treatment, therefore a throw-rake was not utilized. A more in-depth survey was conducted later in the season. Treatment lanes were visible from the previous treatment; however, watermeal and duckweed were both filling in where dead water chestnut plants were either present or dropped from the water column (pictured in Figure 14 and 15). Some

new patches of water chestnut were present which were not there during the initial treatment. These were most likely still in the water column, or underwater during the first treatment.

Figure 15: Dense pondweeds and algae cover the Pond

A follow-up treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. We felt that a third treatment may be necessary to get the control that Water & Wetland, Hop Brook Protection Association, and Sudbury Conservation Commission desires and expects. Based on this goal, we scheduled a survey for July 27th. Based on the survey we updated the plans for the season.

Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	25.3	8.09
1	24.7	7.54
2	24.7	7.33
3	23.9	4.12
4	22.2	3.47
Bottom	22.2	3.04

August 9, 2023 - Survey / Final Herbicide Treatment

On August 9th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin completed a site visit to Carding Millpond. The visit consisted of performing a survey, collecting basic water quality data, and completing a treatment. Conditions during the visit were sunny and calm.

The purpose of today's visit was to provide an additional follow-up treatment to target remaining water chestnut. Overall, the previous treatments greatly reduced the densities of water chestnut in all three ponds. The treatments do not affect watermeal, algae, or duckweed, which remained at the surface. Despite great control from the previous treatments, we added the additional treatment at no cost. The rationale was to absolutely ensure the level of control that the Town of Sudbury, Hop Brook Protection Association, and Water & Wetland expect. Carding Millpond was spot treated for remaining water chestnut control. Stearns Millpond contained the least amount of water chestnut followed by Grist Millpond. Carding Millpond contained some areas with a few remaining "lanes" of water chestnut, but overall, it was very scattered. We did receive some feedback on areas from Hop Brook Protection

Association. These were treated in addition to any additional remaining chestnut. The boat was washed in between ponds.

During the site visit, the final treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (℃)**	**DO (mg/L)**
Surface	26.3	7.77

September 6, 2023 - Post-Management Survey / Water Samples Collected

Figure 16: Navigating through dense pondweeds and algae during the site visit

On September 6th, Senior Environmental Scientist, James Lacasse, made a visit to Carding Millpond. The visit consisted of performing the post-management survey and collecting water quality data in addition to water samples. Conditions during the visit were sunny and calm.

The water chestnut treatment program at Carding Millpond has worked great as the population has significantly decreased since the initial survey in June. Although water chestnut was noted, it was documented as much lower, scattered, densities (pictured in Figure 16).

Portions of the water chestnut population were observed floating on the surface (not connected to a stem or root system). The most dominant species within Carding Millpond included watermeal, duckweed, filamentous algae, and coontail. It is important to note that the "green" vegetation appearance on the surface of the Pond was not all water chestnut, as the majority of this "green" included the dominant species mentioned above (illustrated in Figures 16 and 17). There appeared to be a minor microscopic algae bloom within the water column. Epiphytic algae was noted on a small portion of the vegetation (which indicates that the plant is dying or decaying), specifically on coontail and elodea. A handful of floating water chestnut seeds were documented during the survey. Other species documented included cattails, elodea, and waterlilies. The Secchi disk reading resulted in 2 feet, 11 inches.

Figure 17: Completing the post-management survey at Carding Millpond

Attached is a post-treatment invasive species map. Any time a water chestnut plant was found, a GPS point was collected. The blue dots signify individual plants (or a small grouping of a small number of plants). There were no large contiguous patches of water chestnut

anywhere in the pond; however, in the areas where polygons exist on the map, there were scattered groupings or small patches but by no means throughout these areas. Overall, good coverage was achieved, with scattered plants remained but the majority of the chestnut was controlled.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (℃)**	**DO (mg/L)**
Surface	27.5	13.01
1	26.7	13.22
2	26.2	13.20
3	25.6	12.61
4	25.2	11.39
5	25.2	10.08

Grist Millpond

Figure 18: Grist Millpond - Sudbury, MA

Grist Millpond (pictured in Figure 18) is found north of Route 20 (Boston Post Road) and south of Wayside Inn Road. This waterbody is approximately 12.9 acres and is surrounded by woodlands and wetlands, with a small number of developed properties along the northern shoreline. The Wayside Inn Grist Mill is located downstream of the Pond. Access to the Pond was gained from the northeastern point of the waterbody, adjacent to the outlet. Water flows from the west (inlet at the western point) to east within Grist Millpond. The outlet to the Pond is a small culvert that is noted underneath a walking path. There are walking paths observed around portions of the perimeter of this waterbody. Grist Millpond is a well-known historical site in addition to a popular location for outdoor recreational activities such as hiking, fishing, walking dogs, and bird watching. There is public parking off Wayside Inn Road for both the Grist Millpond area as well as the Wayside Inn Grist Mill area.

Summary Of 2023 Management Activities

Date	Task/Description
June 13, 2023	A pre-management survey was performed to document baseline conditions of the Pond, note the current vegetation species/densities present, and to guide future 2023 management; Water samples were collected
June 30, 2023	An interim survey was completed to confirm potential treatment areas; An herbicide treatment was conducted
July 17, 2023	An interim survey was performed to evaluate the effectiveness of the previous treatment; Follow-up herbicide treatment completed
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September 6, 2023	A post-management survey was completed to evaluate the effectiveness of the previous treatment and the overall 2023 Aquatic Management Program, in addition to helping guide recommendations for 2024; Water samples were collected

June 13, 2023 - Pre-Treatment Survey / Water Samples Collected

On June 13th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a site visit to Grist Millpond. The visit consisted of conducting a survey and collecting water quality data. Conditions during the visit were warm and partly cloudy.

Figure 19: Pondweeds and algae noted throughout the water column and along the surface

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and ArcGIS Field Maps and external GPS. There was a significant reduction in the water chestnut density as a result of last year's treatment, with an estimated 20-30% coverage of water chestnut remaining. The green vegetation from the shoreline should not be assumed as all water chestnut, as the majority was duckweed and filamentous algae (see Figure 19). Elodea (pictured in Figure 19) was documented in dense densities and forming surface mats in some areas. Waterlilies, curly-leaf pondweed, thin-leaf pondweed, ribbon-leaf pondweed, and watermeal were also documented during the survey. Dense densities of filamentous algae were documented on the surface (Figure 19) and within the water column. The new boat launch was greatly appreciated. This made launching the airboat for water chestnut treatments much easier and allowed for even better flexibility due to weather conditions as we are not at the mercy of the crane company's availability. The pH was 7.7, which is within the standard range for freshwater and considered neutral. The water clarity was also assessed, and deemed as above average, as visibility was to the bottom of the Pond. The Secchi reading was 3 feet, 7 inches. All other required water samples were collected from the Pond and were preserved and transported to Alpha Labs for analysis.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	22.6	9.88
1	23.1	9.39
2	22.1	7.48
3	22.2	7.41
Bottom	22.0	7.03

June 30, 2023 – Survey / Initial Herbicide Treatment Conducted

On June 30th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin, made a visit to Grist Millpond. The visit consisted of performing a brief survey, collecting basic water quality data, and completing a treatment. Conditions during the visit were mostly sunny and calm.

Figure 20: The airboat utilized for the treatment

A brief survey was conducted upon arrival to confirm treatment areas. A large reduction in water chestnut regrowth was documented as a result of the previous management, specifically 2022. Algae, duckweed and watermeal on the surface were dominant where chestnut was not present (noted in Figure 20 and 21). Elodea and curly-leaf pondweed were the dominant submerged species. The boat was washed prior to leaving our shop/office that morning. Other species noted during the survey included curly-leaf pondweed and filamentous algae.

A treatment was conducted for the control of water chestnut. The liquid herbicide, Clearcast (imazamox), was applied using the air boat (Figure 20), equipped with a calibrated pump, which is used to target the water chestnut plants via foliar application methodology. This method allows for even and precise coverage. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting. All required pre-treatment information and documents were also sent to Sudbury Conservation Commission.

Figure 21: Pondweeds and algae documented during the site visit

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (°C)**	**Surface DO (mg/L)**
Surface	25.3	9.24
1	25.2	8.27
2	24.1	7.17
3	23.7	7.08
Bottom	23.7	6.43

July 17, 2023 - Survey / Follow-up Herbicide Treatment

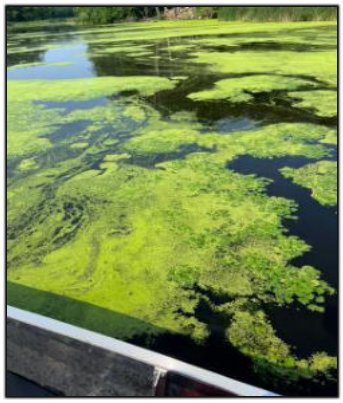


Figure 22: Water chestnut mixed within the filamentous algae

On July 17th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin, made a visit to Grist Millpond. The visit consisted of performing a brief survey, collecting water quality data, and completing a treatment. Conditions during the visit were mostly sunny and calm.

Upon arrival at the site, a brief visual survey was conducted using visual observation. The purpose of the brief survey was to document the success of the previous treatment and to guide the current treatment, therefore a throw-rake was not utilized. A more in-depth survey was conducted during the post-treatment survey later in the year. Good control was achieved during the previous treatment. Lanes were visible and clear of water chestnut. Duckweed, watermeal, and filamentous algae continued to make

up the majority of the cover (illustrated in Figure 22). Water flow was high from the previous rain. We anticipated great control at Grist Millpond from the previous and this treatment. We scheduled a quick survey for the following week to assess control and to help plan a potential third treatment, if necessary. The Secchi disk reading resulted to the bottom, or to the top of the vegetation growth.

During this visit, follow-up treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Surface Temp (℃)**	**Surface DO (mg/L)**
Surface	25.3	7.89
1	25.2	7.03
2	24.1	6.34
3	23.7	5.88
Bottom	23.7	5.68

August 9, 2023 - Post-Treatment Survey / Final Herbicide Treatment

On August 9th, Co-Owner/Senior Aquatic Biologist, Colin Gosselin completed a site visit to Grist Millpond. The visit consisted of performing a survey, collecting basic water quality data, and completing a treatment. Conditions during the visit were sunny and calm.

The purpose of this visit was to provide an additional follow-up treatment to target remaining water chestnut. Overall, the previous treatments greatly reduced the densities of water chestnut in all three ponds. The treatments do not affect watermeal, algae, or duckweed, which remained at the surface. Despite great control from the previous treatments, we added the additional treatment at no cost. The rationale was to absolutely ensure the level of control that the Town of Sudbury, Hop Brook Protection Association, and Water & Wetland expect. Each of the Ponds were spot treated for remaining water chestnut control. Stearns Millpond contained the least amount of water chestnut followed by Grist Millpond. Carding Millpond contained some areas with a few remaining “lanes” of water chestnut, but overall, it was very scattered. We did receive some feedback on areas from Hop Brook Protection Association. These were treated in addition to any additional remaining chestnut. The boat was washed in between Ponds.

During the site visit, the final treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high

winds. Prior to the treatment, the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (℃)**	**DO (mg/L)**
Surface	25.4	7.89

<u>September 6, 2023 - Post-Management Survey / Water Samples Collected</u>

On September 6th, Environmental Scientist, James Lacasse completed a site visit to Grist Millpond. The visit consisted of performing the post-management survey and collecting water quality data in addition to water samples. Conditions during the visit were sunny and calm.

Figure 23: Isolated, water chestnut plant documented during the final survey

The purpose of the survey was to evaluate the effectiveness of the 2023 Aquatic Management Program in addition to help guide recommendations for the 2024 season. The treatment program targeting water chestnut at Grist Millpond worked fantastic in 2023, as minimal water chestnut was noted (isolated populations illustrated in Figure 23). It is important not to confuse the "green" appearance on the surface of the Pond for water chestnut as it was a mix of nuisance densities of natives and filamentous algae. Water chestnut was primarily found within the inlet and towards the inlet, with a few scattered individual plants found along the remainder of the Pond. The most abundant species documented during the survey included duckweed, watermeal, coontail, Elodea, and filamentous algae (documented in Figure 24). Numerous floating water chestnut seeds were observed throughout the survey. The Secchi disk reading resulted in 5 feet, 4 inches.

Figure 24: Dense native pondweeds and algae cover Grist Millpond

Attached is a map of the invasive species. The blue dots signify water chestnut, these were typically just one or two plants. Most of these were also dead and not producing seeds or attached to a stem/root.

Temperature & Dissolved Oxygen		
Depth (ft)	**Temp (℃)**	**DO (mg/L)**
Surface	26.2	7.27
1	25.9	7.11
2	25.4	6.02
3	25.3	5.87
4	25.2	5.77
5	24.7	5.39

WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

Water Quality

As required by the special orders (within the order of conditions), during the June 13th and September 6th survey events, water samples were collected to analyze specific water quality within Grist Millpond, Stearns Millpond, and Carding Millpond. Samples were collected from the middle of the Ponds, preserved, and immediately taken to a State certified laboratory, where they were analyzed for the specific contracted parameters. The samples were analyzed for turbidity, true color, apparent color, total alkalinity, pH, ammonia nitrogen, nitrate nitrogen, total kjeldahl nitrogen, total phosphorus, soluble phosphorus, and E. coli. All samples collected were "surface grabs." Dissolved oxygen and temperature were measured using a calibrated meter during each site visit.

Water quality in ponds and lakes is constantly changing and is altered by many environmental factors. The samples collected during the two site visits provide a baseline and the results depict a "snap-shot" of the results specific to the sampling date. The results from the two sampling events, as well as a description of each parameter are included in the tables below.

Water Quality Parameter	Results					
	6/13/2023			9/6/2023		
	Grist Millpond	Stearns Millpond	Carding Millpond	Grist Millpond	Stearns Millpond	Carding Millpond
Turbidity (NTU)	1.2	2.8	1.4	2.2	1.6	9.9
True Color (A.P.C.U)	19	35	18	20	36	37
Apparent Color (A.P.C.U)	21	47	22	25	48	60
Total Alkalinity (mg $CaCO_3$/L)	75.3	49.2	74.0	54.3	42.6	53.9
pH (SU)	7.7	8.0	7.7	8.13	6.99	8.96
Ammonia Nitrogen (mg/l)	ND	0.084	0.179	ND	0.112	0.123
Nitrogen, Nitrate (mg/l)	2.90	0.270	0.724	2.43	0.254	0.492
Total Kjeldahl Nitrogen (mg/l)	0.534	0.711	2.13	1.01	0.630	0.895
Total Phosphorus (mg/l)	0.035	0.063	0.200	0.047	0.055	0.238
Soluble Phosphorus (mg/l)	0.027	0.027	0.054	0.33	0.036	0.024
E. Coli (col/100ml)	3.0	58	20	34	39	15

*ND – "Non-detectable"

WATER & WETLAND

LAKE, POND & WETLAND MANAGEMENT

Water Quality Parameter Table
Turbidity: Turbidity is either planktonic organisms or suspended solid particulates (algae, clay, silt, dead organic matter) in the water column that interfere with the penetration of light. The more suspended material throughout the water column, the higher the turbidity. *<10 NTU drinking water standards; 10-50 NTU is considered moderate; >50 NTU potentially impactful to aquatic life. All turbidity readings within the three ponds during both samplings were in a desirable range; however, the September Carding Millpond sample was slightly elevated.*
True Color: The color of the water sample after filtering all suspended material. This measurement represents the color of the filtered water due to dissolved components.
Apparent Color: the color of the entire water sample, which consists of color caused by both dissolved and suspended particles/components. This value can be highly variable based on weather conditions. Typically, values may increase in the case of storm events and may decrease in the event of drought. *0-25 is clear, 25-40 is light tea-color, 40-80 is tea color, >80 is dark tea color.*
Total Alkalinity: Measure of the buffering capacity of water, primarily consisting of carbonate, bicarbonate, and hydroxide in typical freshwater. Waters with lower levels are more susceptible to pH shifts. *>20 mg/l is considered healthy; ~50 mg/l illustrates the water is resistant to change. All samplings were near or above 50 mg/l, illustrating that the ponds are less susceptible to pH shifts.*
pH: the measure of how acidic or basic the water is. *<6 notably acidic; 6-9 standard for freshwaters (7 is neutral); >9 notably basic. pH during all samplings was within a standard range for freshwaters.*
Nitrogen, Ammonia: Ammonia and organic nitrogen can enter water through sewage effluent and runoff from land where manure has been applied or stored. Ammonia in water is non-toxic to humans, but it is toxic to aquatic life. Unlike other forms of nitrogen, which can indirectly harm aquatic ecosystems by increasing nutrient levels and promoting algae growth in the process known as eutrophication, ammonia has direct toxic effects on aquatic ecosystems. High levels of ammonia in lakes and streams can promote the growth of algae, which in turn can choke out the growth of other aquatic plants. Bacteria can also convert ammonia in water to nitrate in a process known as nitrification. Nitrification is a beneficial process if it takes place in the soil — plants can use the produced nitrates as food. However, nitrification tends to lower the dissolved oxygen levels in water, making it harder for fish and other aquatic life to breathe. *Ammonia nitrogen was either non-detectable or well below a 1 mg/l threshold.*
Nitrogen, Nitrate: Nitrate nitrogen is important to the growth of algae. Nitrate is the oxidized nitrogen and is often readily free for algae uptake. *<1 mg/l typical for freshwater; 1-10 mg/l is potentially harmful; >10 mg/l possibly toxic. Generally, <0.30 mg/l is ideal, and a maximum of 10 mg/l is the EPA standard for drinking water. Nitrate was elevated in Grist Millpond during both samplings. Despite this, levels were well below the EPA standard of 10 mg/l.*
Total Kjeldahl Nitrogen (TKN): Total Kjeldahl Nitrogen (TKN) is the organic and ammonia forms of nitrogen. Nitrogen is essential for living organisms to live in a pond. *Generally, concentrations below 1.0 mg/l are considered desirable. The September sampling results for Grist Millpond was just at this threshold.*

Total Phosphorus: Total phosphorous is a nutrient that is essential for plants and algae to grow. Typically, a value of .03 mg/l, or 30 parts per billion, is sufficient enough to stimulate excessive plant and algae growth. This sample measures all forms of phosphorus in the water column. *<12 ppb is considered nutrient deficient or oligotrophic; 12-24 ppb is considered a moderate amount of nutrients, or mesotrophic; 25-96 ppb is nutrient rich, or eutrophic; >96 ppb is considered excessive nutrients, or hypereutrophic. Consistent with previous years, the ponds are considered nutrient rich. Both of Carding Millpond's 2023 samples, however, were hypereutrophic. It is important to continue to monitor this parameter, as the excessive rain in 2023 may have added to nutrient loading.*
Soluble Phosphorus: Soluble phosphorous is the measure of filterable soluble and inorganic phosphorus. This form of phosphorus is directly taken up by plant cells. *Soluble phosphorus is considered elevated during all sampling events in all three ponds.*
E. Coli: E.Coli is a potentially harmful fecal coliform bacteria that can be harmful to humans and pose a health threat. *>235 colonies/100 ml is potentially harmful. All results were well below this threshold.*

Algae Sampling

Figure 25: Sampling equipment

During the June 13th and September 6th sampling event, an algae sample from each Pond was collected, and transported to the lab, where they were identified for algae species and enumeration. This parameter is not required within the Order of Conditions, but we feel it has value. We did not charge an extra cost to test for this. The samples were properly preserved and shipped to SePro Labs in North Carolina where they were analyzed for algae ID and enumeration. We have attached the results to this report and have summarized below.

Blue-green algae / cyanobacteria occur in aquatic ecosystems and have the ability to produce toxins. These toxins can pose a risk to human and animal health. The Massachusetts Department of Public Health (MA DPH) recommends an advisory when cell counts exceed 70,000 per ml of water. Dense blooms and scum can contain millions of cells/ml and toxin levels in the parts per million. They can form near embankments and in areas suitable for swimming and other forms of recreation. The June sampling did not find any cyanobacteria within any of the samples. Cyanobacteria was present in both Stearns and Carding Millponds during the September sampling. The counts in Stearns were non-concerning. The cell counts in Carding Millpond were higher than we'd like to see but were well below the 70,000 cells/ml threshold.

Summary/2024 Recommendations

2023 was the second year in which Water & Wetland managed water chestnut within the Hop Brook Ponds. We are hopeful that our effort shines through as we provided additional services this year to ensure satisfaction. The Summer was extremely wet, leading to increased nutrient loading. The Summer was also extremely hot and sunny, leading to increased sunlight penetration. Following the second Clearcast treatment, we conducted an interim survey to assess the achieved level of control. While control at this point was good, we conducted a third application at no additional cost. The timing of all management tasks allowed us to assess efficacy and adjust, as necessary, prior to water chestnut plants setting seed. Overall, excellent control of water chestnut was achieved in all three waterbodies. All notifications,

communication, surveys, and water quality sampling was conducted in strict accordance with the Order of Conditions requirements. Results are becoming extremely apparent in Stearns Millpond. In both Carding and Grist Millponds, nuisance native species including watermeal, duckweed, and algae continue to dominate the surface. The treatments at the ponds are designed to target water chestnut and do not impact these species.

Figure 26: Gristmill Pond with airboat in forefront

Looking forward to 2024, we must consider that water chestnut seeds are viable for 12+ years. Despite the great control achieved in 2023, we anticipate regrowth in 2024 at densities and cover that warrant continued applications of Clearcast. The approach taken in 2023 worked extremely well, as surveys and treatments were conducted early enough that several weeks remained following the 2nd treatment and the time when water chestnut seeds typically drop. We plan to take this approach again in 2024. We will continue to keep both Hop Brook Protection Association and Sudbury Conservation Commission up to date throughout the season, as we did during the past two seasons. This will allow us to make the adjustments defined above, as necessary.

Aside from the water chestnut, some thought should continue to be put towards management of other nuisance and/or invasive species. Especially for Grist Millpond and Carding Millpond, many areas where water chestnut was controlled were replaced by dense watermeal and duckweed covering the surface. Although watermeal and duckweed are both native species, their dense cover also has the ability to limit oxygen exchange and biodiversity. Additionally, these ponds specifically have additional dense species including coontail and/or elodea. Similar to 2022, curly-leaf pondweed (invasive) was again documented in all three waterbodies during the 2023 season. Luckily, milfoil was again not documented in any of the three ponds. In an effort to create open-water habitat in the ponds, some consideration should be given to treatment with Sonar (fluridone), particularly at Carding Millpond and Grist Millpond. Sonar is an aquatic herbicide that was initially registered with the Environmental Protection Agency (EPA) in 1986 and has been used throughout Massachusetts and the United States for decades. The herbicide inhibits the photosynthesis process by stopping plants from making a protective pigment that keeps chlorophyll from breaking down in the sunlight. Fluridone moves quickly throughout a waterbody and is therefore usually applied as a whole lake/basin treatment, as would be recommended for Grist Millpond and Carding Millpond. Sonar is also one of the few herbicides approved for use in drinking water, which speaks volumes to the safety of the product. This approach requires maintenance of approximately 10-20 parts per billion of fluridone for a period of 45-60+ days, so an initial treatment and at least follow-up application would be recommended. We recommend this approach in an effort to create more open-water habitat in the ponds, specifically Grist Millpond and Carding Millpond.

We bring up Sonar as a recommendation, but not necessarily an immediate recommendation. In many cases, water chestnut becomes the first priority as is the case with Hop Brook Ponds. Once the water chestnut has been controlled to a level where minimal management is needed, such as a small amount of hand-pulling, the project could shift towards management of other species. When that time comes, Sonar is the preferred option for Hop Brook Ponds as it provides rate specific selectivity. Meaning we can control some species while growth regulating others. This approach allows for a more balanced eco-system of native plants at healthy densities.

Phosphorus levels remain elevated within the ponds. Water quality should continue to be monitored as it has been in the past. Consideration should be given to a watershed assessment to identify potential sources of phosphorus. Sediment sampling for phosphorus fractions may also be beneficial to determine the extent of internal recycling of phosphorus verses external loading.

We hope that this year-end report has provided Hop Brook Protection Association and Sudbury Conservation Commission with valuable information regarding the details of the work performed at Hop Brook Ponds during the 2023 season. We hope that you continue to be impressed by the level of communication, follow through, and expertise provided by Water & Wetland. We look forward to working closely with you to further improve the health of the Hop Brook Ponds for many years to come.

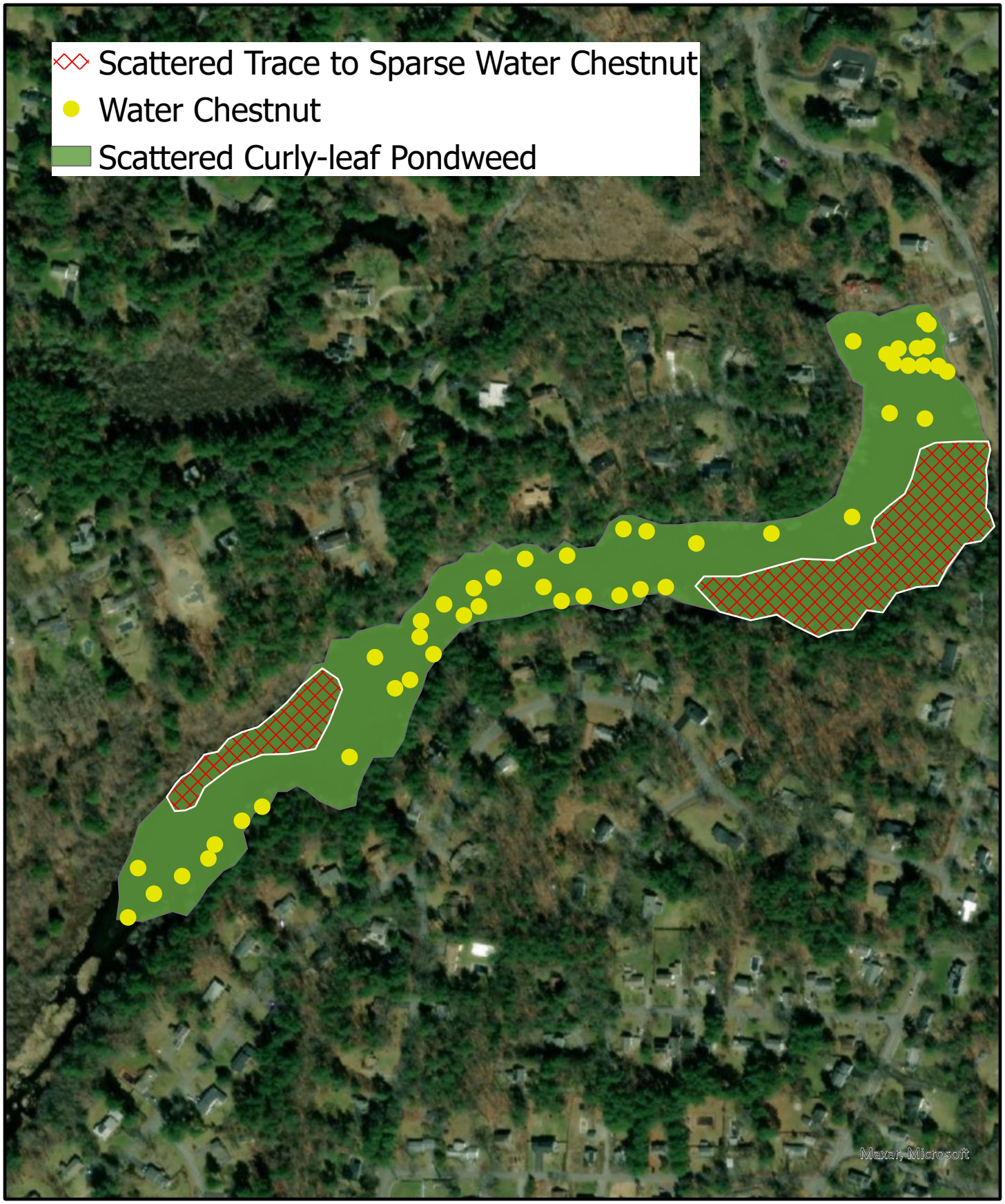
Sincerely,

James Lacasse
Project Manager
Senior Environmental Scientist
c: 774-276-6098
o: 888-4WETLAN(D)
james@waterandwetland.com
www.waterandwetland.com

Attachments Include

- **Pre-Treatment Invasive Species Maps**
- **Post-Treatment Invasive Species Maps**
- **Lab WQ Results**

CC: Sudbury Conservation Commission



WATER & WETLAND
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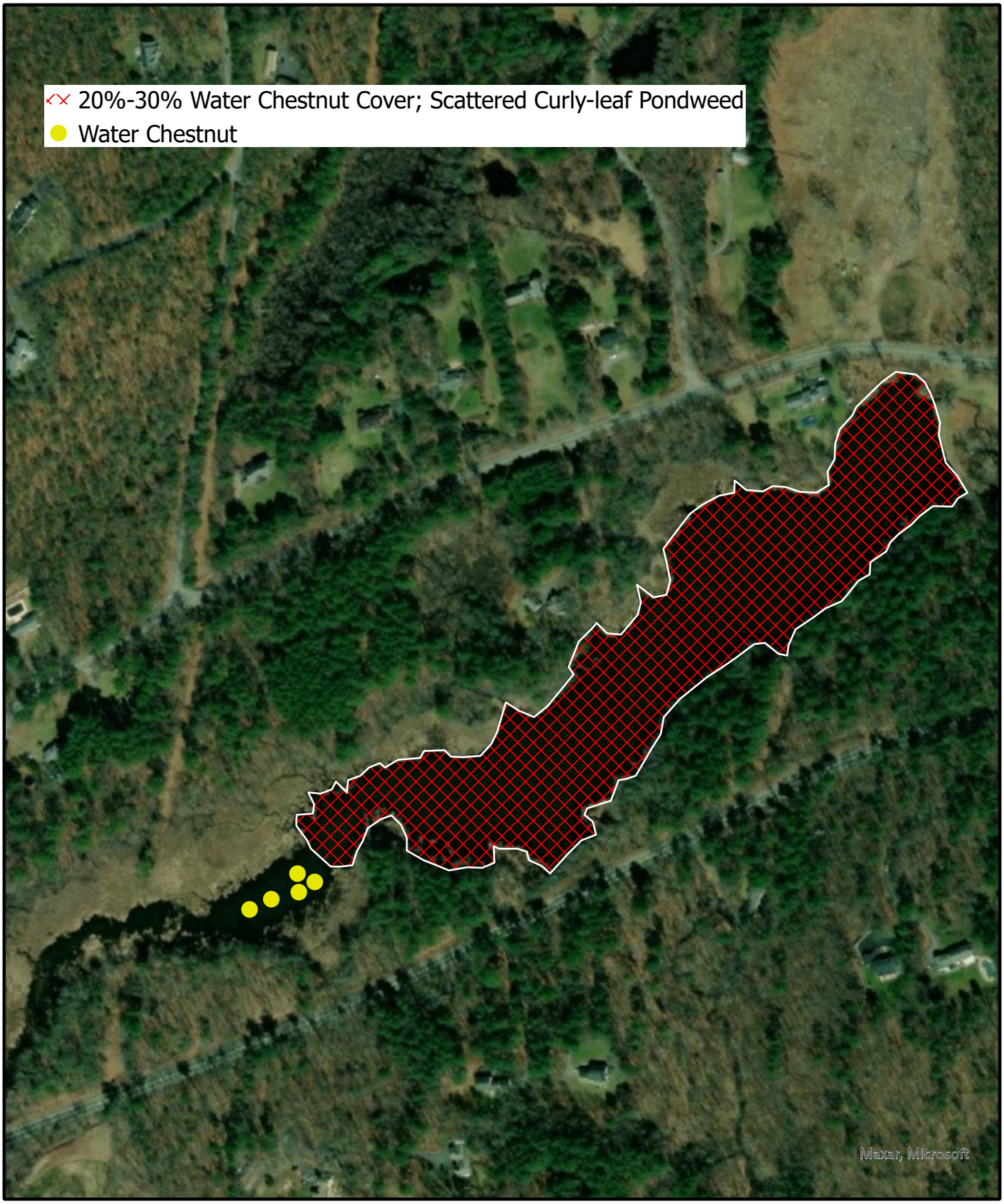
Stearns Millpond
Invasive Species Distribution
Sudbury, MA

Survey Date
6/12/2023

Map Date
6/13/2023

N



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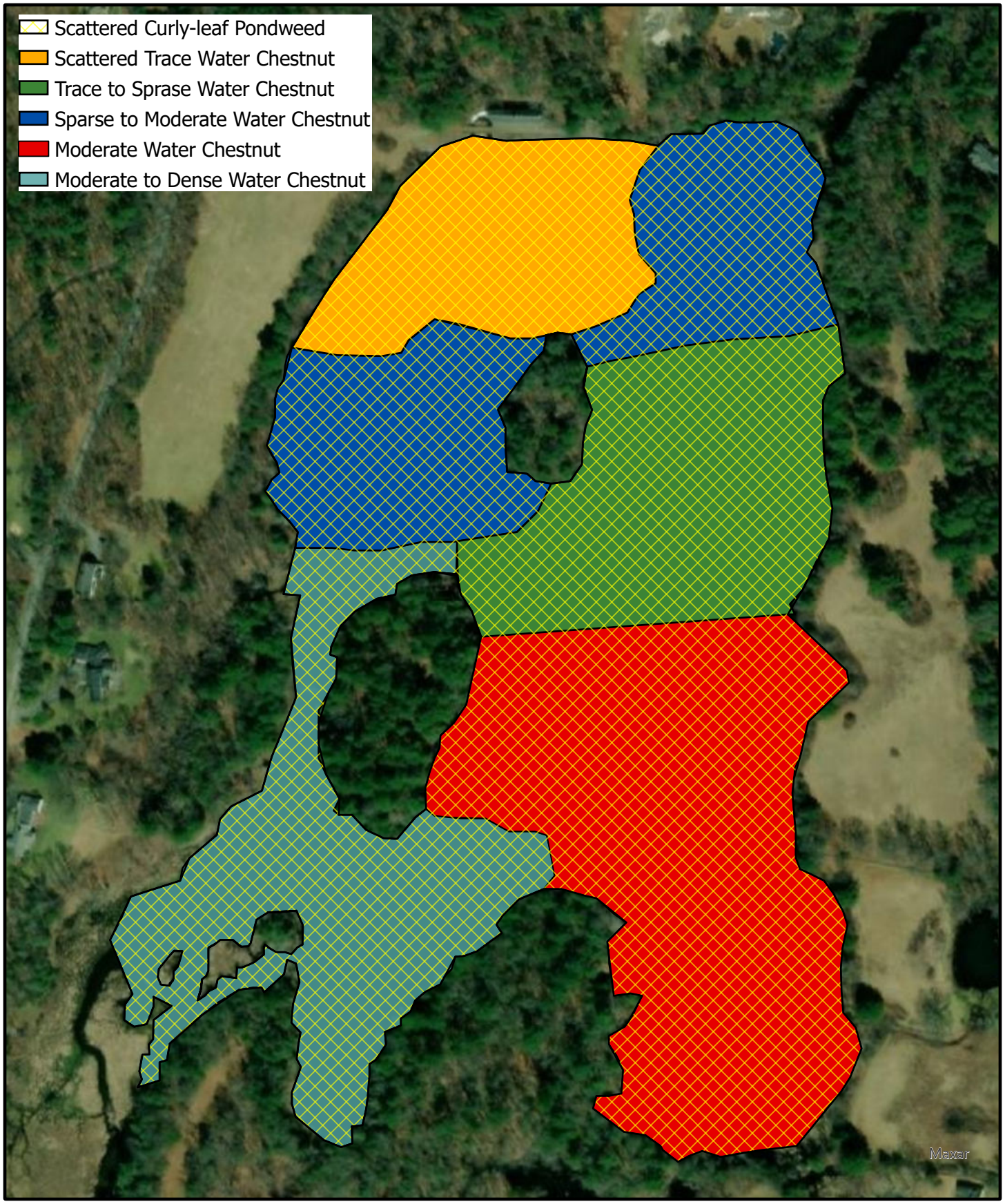
Grist Millpond
Invasive Species Distribution
Sudbury, MA

Survey Date
6/12/2023

Map Date
6/13/2023

N



WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

Carding Millpond
Invasive Species Distribution
Sudbury, MA

Survey Date
6/12/2023

Map Date
6/13/2023

N

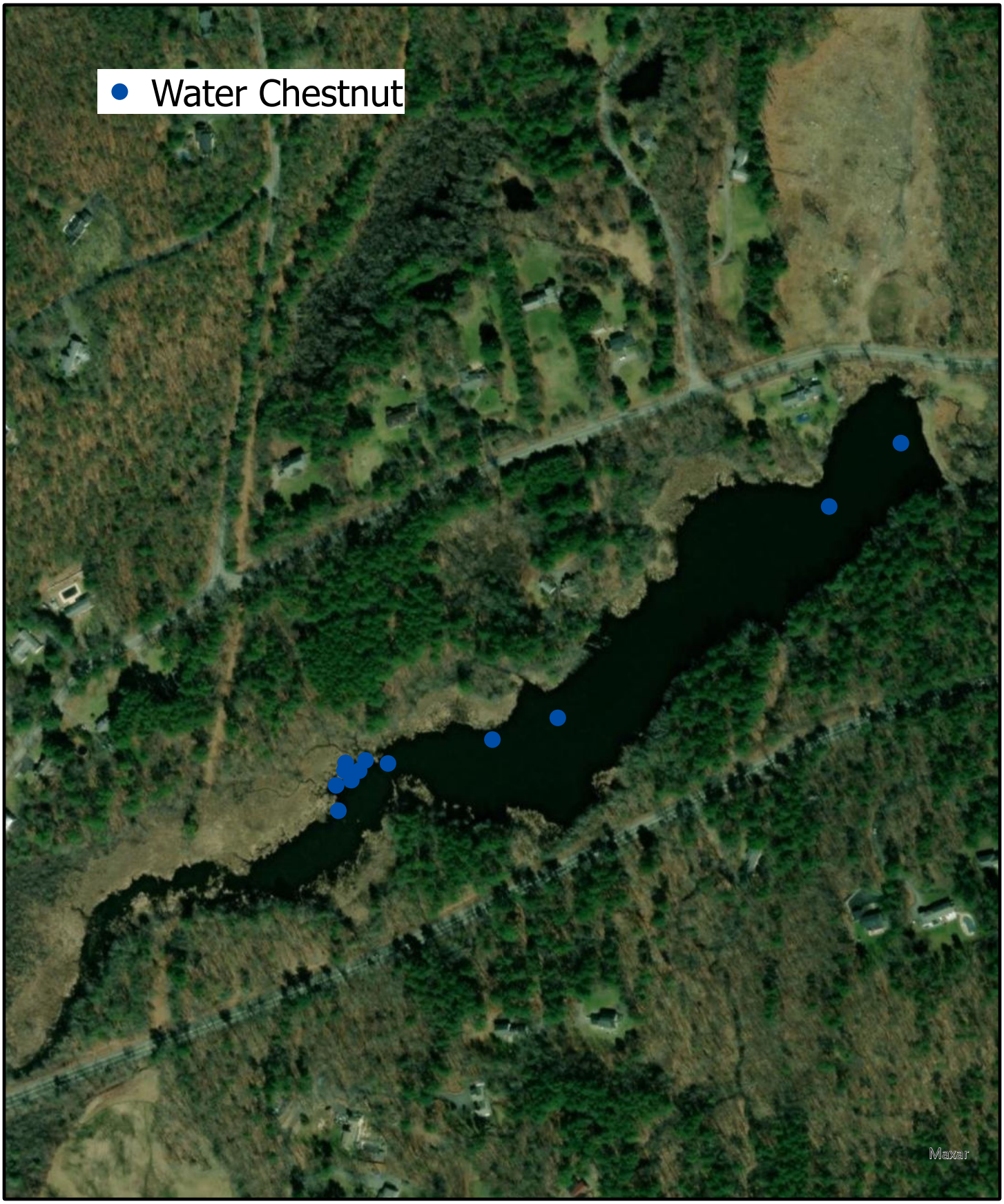
WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

Stearns Millpond
Post-Treatment Invasive Distribution
Sudbury, MA

Survey Date
9/6/2023

Map Date
9/6/2023

N



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Grist Millpond

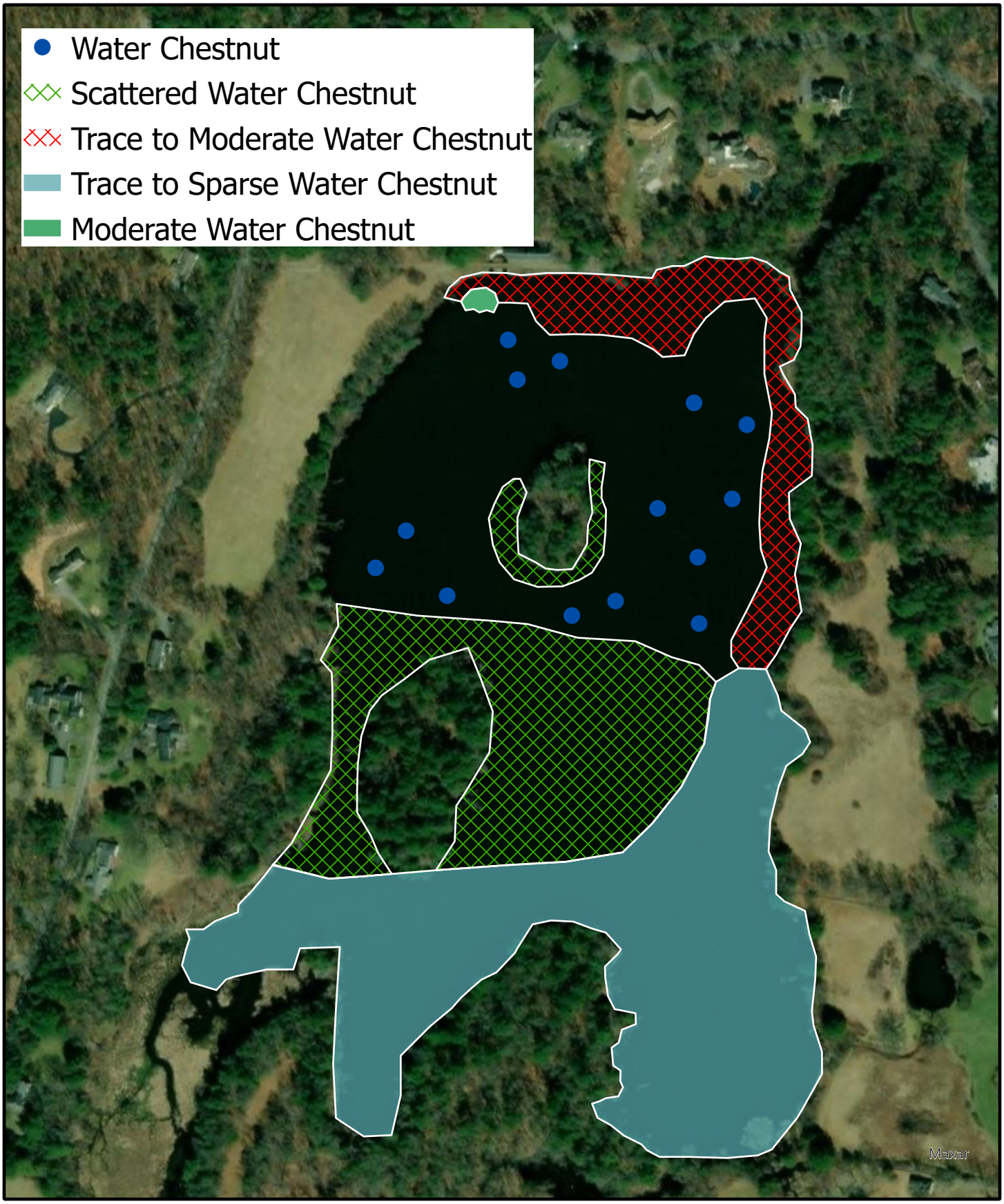
Post-Treatment Invasive Distribution

Sudbury, MA

Survey Date
9/6/2023

Map Date
9/6/2023

N



WATER & WETLAND
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Carding Millpond
Post-Treatment Invasive Distribution
Sudbury, MA

Survey Date
9/6/2023

Map Date
9/6/2023

N

ANALYTICAL REPORT

Lab Number:	L2333049
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	STERNS MILL POND
Project Number:	Not Specified
Report Date:	07/03/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2333049-01	STERNS MILL POND	WATER	SUDBURY, MA	06/12/23 11:30	06/12/23

Project Name:	STERNS MILL POND	**Lab Number:**	L2333049
Project Number:	Not Specified	**Report Date:**	07/03/23

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: STERNS MILL POND
Project Number: Not Specified
Lab Number: L2333049
Report Date: 07/03/23

Case Narrative (continued)

Sample Receipt

The sample was received at the laboratory above the required temperature range. The sample was transported to the laboratory in a cooler with ice packs and delivered directly from the sampling site. This is considered acceptable since the sample was in the process of cooling.

Nitrogen, Total Kjeldahl

The WG1798380-3 Laboratory Duplicate RPD for nitrogen, total kjeldahl (27%), performed on L2333049-01, is above the acceptance criteria; however, the sample and duplicate results are less than five times the reporting limit. Therefore, the RPD is valid.

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: 07/03/23

INORGANICS
&
MISCELLANEOUS

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

SAMPLE RESULTS

Lab ID: L2333049-01
Client ID: STERNS MILL POND
Sample Location: SUDBURY, MA

Date Collected: 06/12/23 11:30
Date Received: 06/12/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	58		col/100ml	2.0	NA	2	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab										
Turbidity	2.8		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
Color, True	35		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Color, Apparent	47		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Alkalinity, Total	49.2		mg CaCO3/L	2.00	NA	1	-	06/26/23 10:45	121,2320B	MKT
Nitrogen, Ammonia	0.084		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:24	121,4500NH3-BH	KEP
Nitrogen, Nitrate	0.270		mg/l	0.100	--	1	-	06/13/23 04:25	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	0.711		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 21:03	121,4500NH3-H	AVT
Phosphorus, Total	0.063		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:26	121,4500P-E	EYA
Phosphorus, Soluble	0.027		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:18	121,4500P-E	EYA

Project Name: STERNS MILL POND
Project Number: Not Specified
Lab Number: L2333049
Report Date: 07/03/23

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 Batch: WG1790355-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790399-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	06/13/23 03:16	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790900-1										
Turbidity	ND		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1794366-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:05	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1795626-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:02	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796049-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	06/26/23 11:52	121,2320B	MKT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796685-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:06	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1798380-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 20:46	121,4500NH3-H	AVT

Lab Control Sample Analysis

Batch Quality Control

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790399-2								
Nitrogen, Nitrate	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790900-2								
Turbidity	107		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1794366-2								
Phosphorus, Soluble	100		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1795626-2								
Phosphorus, Total	96		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796049-2								
Alkalinity, Total	107		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796685-2								
Nitrogen, Ammonia	86		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1798380-2								
Nitrogen, Total Kjeldahl	92		-		78-122	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790399-4 QC Sample: L2332985-01 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	4.22	106		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-4 QC Sample: L2331387-03 Client ID: MS Sample												
Phosphorus, Soluble	ND	0.5	0.527	105		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-4 QC Sample: L2332934-21 Client ID: MS Sample												
Phosphorus, Total	0.040	0.5	0.537	99		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-4 QC Sample: L2333057-03 Client ID: MS Sample												
Alkalinity, Total	22.7	100	141	**118**	Q	-	-		86-116	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-4 QC Sample: L2334057-01 Client ID: MS Sample												
Nitrogen, Ammonia	11.1	4	15.5	110		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-4 QC Sample: L2333049-01 Client ID: STERNS MILL POND												
Nitrogen, Total Kjeldahl	0.711	8	8.20	94		-	-		77-111	-		24

Lab Duplicate Analysis
Batch Quality Control

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790399-3 QC Sample: L2332985-01 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790808-1 QC Sample: L2333303-02 Client ID: DUP Sample						
Color, Apparent	23	23	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790811-1 QC Sample: L2333261-03 Client ID: DUP Sample						
Color, True	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790900-3 QC Sample: L2333052-01 Client ID: DUP Sample						
Turbidity	1.4	1.4	NTU	0		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-3 QC Sample: L2331387-03 Client ID: DUP Sample						
Phosphorus, Soluble	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-3 QC Sample: L2332934-21 Client ID: DUP Sample						
Phosphorus, Total	0.040	0.040	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-3 QC Sample: L2333057-03 Client ID: DUP Sample						
Alkalinity, Total	22.7	22.8	mg CaCO3/L	0		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-3 QC Sample: L2334057-01 Client ID: DUP Sample						
Nitrogen, Ammonia	11.1	11.7	mg/l	5		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-3 QC Sample: L2333049-01 Client ID: STERNS MILL POND						
Nitrogen, Total Kjeldahl	0.711	0.932	mg/l	**27**	Q	24

Project Name: STERNS MILL POND
Project Number: Not Specified

Lab Number: L2333049
Report Date: 07/03/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2333049-01A	Bacteria Cup Na2S2O3 preserved	D	NA		22.1	Y	Absent		E-COLI-MF(.33)
L2333049-01B	Bacteria Cup Na2S2O3 preserved	D	NA		22.1	Y	Absent		E-COLI-MF(.33)
L2333049-01C	Plastic 250ml unpreserved/No Headspace	D	NA		22.1	Y	Absent		ALK-T-2320(14)
L2333049-01D	Plastic 250ml unpreserved	D	8	8	22.1	Y	Absent		FILTER(1)
L2333049-01E	Plastic 250ml unpreserved	D	8	8	22.1	Y	Absent		TURB-2130(2),NO3-4500(2)
L2333049-01F	Amber 500ml unpreserved	D	8	8	22.1	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2333049-01G	Plastic 950ml H2SO4 preserved	D	<2	<2	22.1	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2333049-01W	Plastic 250ml H2SO4 preserved Filtrates	D	NA		22.1	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	STERNS MILL POND	**Lab Number:**	L2333049
Project Number:	Not Specified	**Report Date:**	07/03/23

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:	STERNS MILL POND	**Lab Number:**	L2333049
Project Number:	Not Specified	**Report Date:**	07/03/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	STERNS MILL POND	**Lab Number:**	L2333049
Project Number:	Not Specified	**Report Date:**	07/03/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: STERNS MILL POND
Project Number: Not Specified
Lab Number: L2333049
Report Date: 07/03/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 6/12/23

ALPHA Job #: L2333049

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

Client Information

Client: Water + Wetland
Address: 115 South St, Upton, MA 01568
Phone: 978-868-4822
Email: info@waterandwetland.com

Project Information

Project Name: Sterns Mill Pond
Project Location: Sudbury, MA
Project #:
Project Manager: Grace Adams.
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

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

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Color A, Color T; E-Coli; TURB NO3; SPHOS-4500; NH3 TKN TPHOS; ALK-T-2320

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Color A, Color T	E-Coli	TURB NO3	SPHOS-4500	NH3 TKN TPHOS	ALK-T-2320	Sample Comments	Total # Bottles
33049-01	Sterns Mill Pond	6/12	11:30	WS	GA	✓	✓	✓	✓	✓	✓		

Container Type	P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle
Preservative	A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
grace adams	6/12 3:30	[signature]	6/12 1530

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

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

ANALYTICAL REPORT

Lab Number:	L2333046
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	GRIST MILL POND
Project Number:	Not Specified
Report Date:	07/03/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2333046-01	GRIST MILL POND	WATER	SUDBURY, MA	06/12/23 12:00	06/12/23

Project Name:	GRIST MILL POND	**Lab Number:**	L2333046
Project Number:	Not Specified	**Report Date:**	07/03/23

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: GRIST MILL POND
Project Number: Not Specified
Lab Number: L2333046
Report Date: 07/03/23

Case Narrative (continued)

Sample Receipt

The sample was received at the laboratory above the required temperature range. The sample was transported to the laboratory in a cooler with ice packs and delivered directly from the sampling site. This is considered acceptable since the sample was in the process of cooling.

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: 07/03/23

INORGANICS
&
MISCELLANEOUS

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

SAMPLE RESULTS

Lab ID: L2333046-01
Client ID: GRIST MILL POND
Sample Location: SUDBURY, MA

Date Collected: 06/12/23 12:00
Date Received: 06/12/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	3.0		col/100ml	2.0	NA	2	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab										
Turbidity	1.2		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
Color, True	19		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Color, Apparent	21		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Alkalinity, Total	75.3		mg CaCO3/L	2.00	NA	1	-	06/26/23 10:42	121,2320B	MKT
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:23	121,4500NH3-BH	KEP
Nitrogen, Nitrate	2.90		mg/l	0.100	--	1	-	06/13/23 04:23	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	0.534		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 21:02	121,4500NH3-H	AVT
Phosphorus, Total	0.035		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:25	121,4500P-E	EYA
Phosphorus, Soluble	0.027		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:17	121,4500P-E	EYA

Project Name: GRIST MILL POND
Project Number: Not Specified
Lab Number: L2333046
Report Date: 07/03/23

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 Batch: WG1790355-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790399-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	06/13/23 03:16	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790900-1										
Turbidity	ND		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1794366-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:05	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1795626-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:02	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796049-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	06/26/23 11:52	121,2320B	MKT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796685-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:06	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1798380-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 20:46	121,4500NH3-H	AVT

Lab Control Sample Analysis

Batch Quality Control

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790399-2								
Nitrogen, Nitrate	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790900-2								
Turbidity	107		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1794366-2								
Phosphorus, Soluble	100		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1795626-2								
Phosphorus, Total	96		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796049-2								
Alkalinity, Total	107		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796685-2								
Nitrogen, Ammonia	86		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1798380-2								
Nitrogen, Total Kjeldahl	92		-		78-122	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790399-4 QC Sample: L2332985-01 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	4.22	106		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-4 QC Sample: L2331387-03 Client ID: MS Sample												
Phosphorus, Soluble	ND	0.5	0.527	105		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-4 QC Sample: L2332934-21 Client ID: MS Sample												
Phosphorus, Total	0.040	0.5	0.537	99		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-4 QC Sample: L2333057-03 Client ID: MS Sample												
Alkalinity, Total	22.7	100	141	**118**	Q	-	-		86-116	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-4 QC Sample: L2334057-01 Client ID: MS Sample												
Nitrogen, Ammonia	11.1	4	15.5	110		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-4 QC Sample: L2333049-01 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	0.711	8	8.20	94		-	-		77-111	-		24

Lab Duplicate Analysis
Batch Quality Control

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790399-3 QC Sample: L2332985-01 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790808-1 QC Sample: L2333303-02 Client ID: DUP Sample						
Color, Apparent	23	23	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790811-1 QC Sample: L2333261-03 Client ID: DUP Sample						
Color, True	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790900-3 QC Sample: L2333052-01 Client ID: DUP Sample						
Turbidity	1.4	1.4	NTU	0		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-3 QC Sample: L2331387-03 Client ID: DUP Sample						
Phosphorus, Soluble	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-3 QC Sample: L2332934-21 Client ID: DUP Sample						
Phosphorus, Total	0.040	0.040	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-3 QC Sample: L2333057-03 Client ID: DUP Sample						
Alkalinity, Total	22.7	22.8	mg CaCO3/L	0		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-3 QC Sample: L2334057-01 Client ID: DUP Sample						
Nitrogen, Ammonia	11.1	11.7	mg/l	5		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-3 QC Sample: L2333049-01 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	0.711	0.932	mg/l	**27**	Q	24

Project Name: GRIST MILL POND
Project Number: Not Specified

Lab Number: L2333046
Report Date: 07/03/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2333046-01A	Bacteria Cup Na2S2O3 preserved	A	NA		20.8	Y	Absent		E-COLI-MF(.33)
L2333046-01B	Bacteria Cup Na2S2O3 preserved	A	NA		20.8	Y	Absent		E-COLI-MF(.33)
L2333046-01C	Plastic 250ml unpreserved/No Headspace	A	NA		20.8	Y	Absent		ALK-T-2320(14)
L2333046-01D	Plastic 250ml unpreserved	A	8	8	20.8	Y	Absent		FILTER(1)
L2333046-01E	Plastic 250ml unpreserved	A	8	8	20.8	Y	Absent		TURB-2130(2),NO3-4500(2)
L2333046-01F	Amber 500ml unpreserved	A	8	8	20.8	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2333046-01G	Plastic 950ml H2SO4 preserved	A	<2	<2	20.8	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2333046-01W	Plastic 250ml H2SO4 preserved Filtrates	A	NA		20.8	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	GRIST MILL POND	**Lab Number:**	L2333046
Project Number:	Not Specified	**Report Date:**	07/03/23

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:	GRIST MILL POND	**Lab Number:**	L2333046
Project Number:	Not Specified	**Report Date:**	07/03/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	GRIST MILL POND	**Lab Number:**	L2333046
Project Number:	Not Specified	**Report Date:**	07/03/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: GRIST MILL POND
Project Number: Not Specified
Lab Number: L2333046
Report Date: 07/03/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Serial_No:07032313:26

CHAIN OF CUSTODY

PAGE ____ OF ____

ALPHA ANALYTICAL

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

Date Rec'd in Lab: 6/12/23

ALPHA Job #: L2333046

Client Information

Client: Water and Wetland
Address: 115 South Street, Upton MA 01568
Phone: 774 276 6098
Email: info@waterandwetland.com

Project Information

Project Name: Grist Mill Pond
Project Location: Sudbury, MA
Project #:
Project Manager: Jarod Lacasse
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

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

Additional Project Information:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Color A, Color T; E-coli MF; Turb, NO3; S phos; NH3 TKN TPhos; Alk-T

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Color A, Color T	E-coli MF	Turb, NO3	S phos	NH3 TKN TPhos	Alk-T	Sample Comments	TOTAL # BOTTLES
33046-01	Grist Mill Pond	6/12/23	12:00pm	WS	JL	X	X	X	X	X	X		7

Container Type	
Preservative	

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

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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	6/12/23 3:30pm	[signature]	6/12/23 1530

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

ANALYTICAL REPORT

Lab Number:	L2333052
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	CARDING MILL POND
Project Number:	Not Specified
Report Date:	07/05/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2333052-01	CARDING MILL POND	WATER	SUDBURY, MA	06/12/23 13:30	06/12/23

Project Name:	CARDING MILL POND	**Lab Number:**	L2333052
Project Number:	Not Specified	**Report Date:**	07/05/23

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:	CARDING MILL POND	**Lab Number:**	L2333052
Project Number:	Not Specified	**Report Date:**	07/05/23

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were transported to the laboratory in a cooler with ice packs and delivered directly from the sampling site. This is considered acceptable since the samples were in the process of cooling.

L2333052-01: Sample containers for Soluble Phosphorus were received for the "CARDING MILL POND" sample, but were not listed on the chain of custody. At the client's request, the analysis was performed.

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: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 07/05/23

INORGANICS
&
MISCELLANEOUS

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

SAMPLE RESULTS

Lab ID: L2333052-01
Client ID: CARDING MILL POND
Sample Location: SUDBURY, MA

Date Collected: 06/12/23 13:30
Date Received: 06/12/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	20		col/100ml	2.0	NA	2	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab										
Turbidity	1.4		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
Color, True	18		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Color, Apparent	22		A.P.C.U.	5.0	--	1	-	06/13/23 20:20	121,2120B	AAS
Alkalinity, Total	74.0		mg CaCO3/L	2.00	NA	1	-	06/26/23 11:54	121,2320B	MKT
Nitrogen, Ammonia	0.179		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:28	121,4500NH3-BH	KEP
Nitrogen, Nitrate	0.724		mg/l	0.100	--	1	-	06/13/23 03:58	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	2.13		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 21:06	121,4500NH3-H	AVT
Phosphorus, Total	0.200		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:27	121,4500P-E	EYA
Phosphorus, Soluble	0.054		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:18	121,4500P-E	EYA

Project Name: CARDING MILL POND
Project Number: Not Specified
Lab Number: L2333052
Report Date: 07/05/23

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 Batch: WG1790355-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	06/12/23 19:17	121,9213D	DRV
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790398-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	06/13/23 03:14	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1790900-1										
Turbidity	ND		NTU	0.20	--	1	-	06/13/23 23:02	121,2130B	AAS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1794366-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	06/22/23 06:15	06/22/23 09:05	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1795626-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	06/24/23 10:48	06/24/23 15:02	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796049-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	06/26/23 11:52	121,2320B	MKT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1796685-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	06/27/23 16:12	06/28/23 12:06	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1798380-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	06/30/23 15:39	07/02/23 20:46	121,4500NH3-H	AVT

Lab Control Sample Analysis

Batch Quality Control

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790398-2								
Nitrogen, Nitrate	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1790900-2								
Turbidity	107		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1794366-2								
Phosphorus, Soluble	100		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1795626-2								
Phosphorus, Total	96		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796049-2								
Alkalinity, Total	107		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1796685-2								
Nitrogen, Ammonia	86		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1798380-2								
Nitrogen, Total Kjeldahl	92		-		78-122	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790398-4 QC Sample: L2332934-02 Client ID: MS Sample												
Nitrogen, Nitrate	4.76	4	8.95	105		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-4 QC Sample: L2331387-03 Client ID: MS Sample												
Phosphorus, Soluble	ND	0.5	0.527	105		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-4 QC Sample: L2332934-21 Client ID: MS Sample												
Phosphorus, Total	0.040	0.5	0.537	99		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-4 QC Sample: L2333057-03 Client ID: MS Sample												
Alkalinity, Total	22.7	100	141	**118**	Q	-	-		86-116	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-4 QC Sample: L2334057-01 Client ID: MS Sample												
Nitrogen, Ammonia	11.1	4	15.5	110		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-4 QC Sample: L2333049-01 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	0.711	8	8.20	94		-	-		77-111	-		24

Lab Duplicate Analysis
Batch Quality Control

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790398-3 QC Sample: L2332934-02 Client ID: DUP Sample						
Nitrogen, Nitrate	4.76	4.78	mg/l	0		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790808-1 QC Sample: L2333303-02 Client ID: DUP Sample						
Color, Apparent	23	23	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790811-1 QC Sample: L2333261-03 Client ID: DUP Sample						
Color, True	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1790900-3 QC Sample: L2333052-01 Client ID: CARDING MILL POND						
Turbidity	1.4	1.4	NTU	0		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1794366-3 QC Sample: L2331387-03 Client ID: DUP Sample						
Phosphorus, Soluble	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1795626-3 QC Sample: L2332934-21 Client ID: DUP Sample						
Phosphorus, Total	0.040	0.040	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796049-3 QC Sample: L2333057-03 Client ID: DUP Sample						
Alkalinity, Total	22.7	22.8	mg CaCO3/L	0		10
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1796685-3 QC Sample: L2334057-01 Client ID: DUP Sample						
Nitrogen, Ammonia	11.1	11.7	mg/l	5		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1798380-3 QC Sample: L2333049-01 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	0.711	0.932	mg/l	**27**	Q	24

Project Name: CARDING MILL POND
Project Number: Not Specified

Lab Number: L2333052
Report Date: 07/05/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2333052-01A	Bacteria Cup Na2S2O3 preserved	B	NA		18.9	Y	Absent		E-COLI-MF(.33)
L2333052-01B	Bacteria Cup Na2S2O3 preserved	B	NA		18.9	Y	Absent		E-COLI-MF(.33)
L2333052-01C	Plastic 250ml unpreserved/No Headspace	B	NA		18.9	Y	Absent		ALK-T-2320(14)
L2333052-01D	Plastic 250ml unpreserved	B	8	8	18.9	Y	Absent		FILTER(1)
L2333052-01E	Plastic 250ml unpreserved	B	8	8	18.9	Y	Absent		TURB-2130(2),NO3-4500(2)
L2333052-01F	Amber 500ml unpreserved	B	8	8	18.9	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2333052-01G	Plastic 950ml H2SO4 preserved	B	<2	<2	18.9	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2333052-01W	Plastic 250ml H2SO4 preserved Filtrates	B	NA		18.9	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	CARDING MILL POND	**Lab Number:**	L2333052
Project Number:	Not Specified	**Report Date:**	07/05/23

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:	CARDING MILL POND	**Lab Number:**	L2333052
Project Number:	Not Specified	**Report Date:**	07/05/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	CARDING MILL POND	**Lab Number:**	L2333052
Project Number:	Not Specified	**Report Date:**	07/05/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: CARDING MILL POND
Project Number: Not Specified
Lab Number: L2333052
Report Date: 07/05/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 6/12/23

ALPHA Job #: L2333052

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

Client Information

Client: Water and Wetland
Address: 115 South Street
Upton MA 01568
Phone: 774 276 6098
Email: info@waterandwetland.com

Additional Project Information:

Project Information

Project Name: Carding Mill Pond
Project Location: Sudbury, MA
Project #:
Project Manager: James Lacasse
ALPHA Quote #:

Turn-Around Time

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

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL ☐ Same as Client info

Billing Information

PO #:

Regulatory Requirements & Project Information Requirements

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

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Color A, Color T	E-coli MF	Turb, NO3	NH3, TKN, TPhos	Alk-T	Sample Comments	TOTAL # BOTTLES
33052-01	Carding Mill Pond	6/12/23	1:30pm	WS	JL									X	X	X	X	X		7

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

Container Type	Preservative
P= Plastic	A= None
A= Amber glass	B= HCl
V= Vial	C= HNO_3
G= Glass	D= H_2SO_4
B= Bacteria cup	E= NaOH
C= Cube	F= MeOH
O= Other	G= $NaHSO_4$
E= Encore	H= $Na_2S_2O_3$
D= BOD Bottle	I= Ascorbic Acid
	J= NH_4Cl
	K= Zn Acetate
	O= Other

	Container Type																			
	Preservative																			

Relinquished By:	Date/Time	Received By:	Date/Time
	6/12/23 3:30pm		6/12 1530

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

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

ANALYTICAL REPORT

Lab Number:	L2351553
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	STERNS MILLPOND
Project Number:	Not Specified
Report Date:	09/20/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2351553-01	STERNS MILLPOND	WATER	SUDBURY, MA	09/06/23 11:15	09/06/23

Project Name:	STERNS MILLPOND	**Lab Number:**	L2351553
Project Number:	Not Specified	**Report Date:**	09/20/23

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: STERNS MILLPOND
Project Number: Not Specified
Lab Number: L2351553
Report Date: 09/20/23

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were delivered directly from the sampling site but were not on ice.

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: Ashaley Moynihan

Title: Technical Director/Representative Date: 09/20/23

INORGANICS
&
MISCELLANEOUS

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

SAMPLE RESULTS

Lab ID: L2351553-01
Client ID: STERNS MILLPOND
Sample Location: SUDBURY, MA

Date Collected: 09/06/23 11:15
Date Received: 09/06/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	39		col/100ml	2.0	NA	2	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab										
Turbidity	1.6		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
Color, True	36		A.P.C.U.	5.0	--	1	-	09/08/23 08:18	121,2120B	ERB
Color, Apparent	48		A.P.C.U.	10	--	2	-	09/07/23 23:49	121,2120B	AAS
Alkalinity, Total	42.6		mg CaCO3/L	2.00	NA	1	-	09/19/23 09:23	121,2320B	MKT
pH (H)	6.99		SU	-	NA	1	-	09/07/23 17:49	1,9040C	AAS
Nitrogen, Ammonia	0.112		mg/l	0.075	--	1	09/17/23 22:02	09/19/23 09:01	121,4500NH3-BH	KEP
Nitrogen, Nitrate	0.254		mg/l	0.100	--	1	-	09/07/23 05:13	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	0.630		mg/l	0.300	--	1	09/18/23 14:35	09/19/23 17:02	121,4500NH3-H	AVT
Phosphorus, Total	0.055		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:35	121,4500P-E	EYA
Phosphorus, Soluble	0.036		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:47	121,4500P-E	EYA

Project Name: STERNS MILLPOND
Project Number: Not Specified
Lab Number: L2351553
Report Date: 09/20/23

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 Batch: WG1824334-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824429-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	09/07/23 02:54	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824560-1										
Turbidity	ND		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825041-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:30	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825160-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:42	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828477-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	09/17/23 22:02	09/19/23 08:47	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828610-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	09/18/23 14:35	09/19/23 16:54	121,4500NH3-H	AVT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1829114-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	09/19/23 10:33	121,2320B	MKT

Lab Control Sample Analysis

Batch Quality Control

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824429-2								
Nitrogen, Nitrate	99		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824560-2								
Turbidity	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824854-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825041-2								
Phosphorus, Total	98		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825160-2								
Phosphorus, Soluble	97		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828477-2								
Nitrogen, Ammonia	95		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828610-2								
Nitrogen, Total Kjeldahl	92		-		78-122	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1829114-2					
Alkalinity, Total	94	-	90-110	-	10

Matrix Spike Analysis
Batch Quality Control

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-4 QC Sample: L2351494-01 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	4.12	103		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-4 QC Sample: L2351609-02 Client ID: MS Sample												
Phosphorus, Total	0.024	0.5	0.530	101		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-4 QC Sample: L2351561-01 Client ID: MS Sample												
Phosphorus, Soluble	0.024	0.5	0.524	100		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828477-4 QC Sample: L2351494-03 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.67	92		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828610-4 QC Sample: L2352681-01 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	ND	8	6.84	86		-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-4 QC Sample: L2351732-01 Client ID: MS Sample												
Alkalinity, Total	97.7	100	200	102		-	-		86-116	-		10

Lab Duplicate Analysis
Batch Quality Control

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-3 QC Sample: L2351494-01 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824560-3 QC Sample: L2351732-01 Client ID: DUP Sample						
Turbidity	0.68	0.64	NTU	6		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824854-2 QC Sample: L2351260-01 Client ID: DUP Sample						
pH	7.38	7.45	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824946-1 QC Sample: L2351759-01 Client ID: DUP Sample						
Color, Apparent	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-3 QC Sample: L2351609-02 Client ID: DUP Sample						
Phosphorus, Total	0.024	0.021	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825062-1 QC Sample: L2351561-01 Client ID: DUP Sample						
Color, True	37	37	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-3 QC Sample: L2351561-01 Client ID: DUP Sample						
Phosphorus, Soluble	0.024	0.020	mg/l	18		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828477-3 QC Sample: L2351494-03 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828610-3 QC Sample: L2352681-01 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	ND	ND	mg/l	NC		24

Lab Duplicate Analysis

Batch Quality Control

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-3 QC Sample: L2351732-01 Client ID: DUP Sample					
Alkalinity, Total	97.7	90.8	mg CaCO3/L	7	10

Project Name: STERNS MILLPOND
Project Number: Not Specified

Lab Number: L2351553
Report Date: 09/20/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2351553-01A	Bacteria Cup Na2S2O3 preserved	A	NA		24.8	Y	Absent		E-COLI-MF(.33)
L2351553-01B	Bacteria Cup Na2S2O3 preserved	A	NA		24.8	Y	Absent		E-COLI-MF(.33)
L2351553-01C	Plastic 250ml unpreserved/No Headspace	A	NA		24.8	Y	Absent		ALK-T-2320(14)
L2351553-01D	Plastic 950ml H2SO4 preserved	A	<2	<2	24.8	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2351553-01E	Plastic 250ml unpreserved	A	7	7	24.8	Y	Absent		FILTER(1)
L2351553-01F	Plastic 250ml unpreserved	A	7	7	24.8	Y	Absent		TURB-2130(2),PH-9040(1),NO3-4500(2)
L2351553-01G	Amber 250ml unpreserved	A	7	7	24.8	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2351553-01X	Plastic 250ml H2SO4 preserved Filtrates	A	NA		24.8	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	STERNS MILLPOND	**Lab Number:**	L2351553
Project Number:	Not Specified	**Report Date:**	09/20/23

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:	STERNS MILLPOND	**Lab Number:**	L2351553
Project Number:	Not Specified	**Report Date:**	09/20/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	STERNS MILLPOND	**Lab Number:**	L2351553
Project Number:	Not Specified	**Report Date:**	09/20/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: STERNS MILLPOND
Project Number: Not Specified
Lab Number: L2351553
Report Date: 09/20/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Serial_No:09202318:11

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 9/6/23

ALPHA Job #: L2351553

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

Project Information

- Project Name: Stearns Millpond
- Project Location: Sudbury, MA
- Project #:
- Project Manager: James Lucasso
- ALPHA Quote #:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Client Information

- Client: Water and Wetland
- Address: 115 South Street, Upton, MA 01568
- Phone: 774-276-6098
- Email: info@waterandwetland.com

Regulatory Requirements & Project Information Requirements

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

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☐ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint; Color A, Color T; E.Coli-MF; Turb, NO3, pH; S-Phos; NH3, TKN, T.Phos; Alkalinity

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Color A, Color T	E.Coli-MF	Turb, NO3, pH	S-Phos	NH3, TKN, T.Phos	Alkalinity	Sample Comments	TOTAL # BOTTLES
51553-01	Stearns Millpond	9/6/23	11:45 am	WS	JL	X	X	X	X	X	X		7

Container Type	
Preservative	

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

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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/6/23 1:08pm	[signature]	9/6/23 1308

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

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

ANALYTICAL REPORT

Lab Number:	L2351556
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	GRIST MILLPOND
Project Number:	Not Specified
Report Date:	09/20/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2351556-01	GRIST MILLPOND	WATER	SUDBURY, MA	09/06/23 12:30	09/06/23

Project Name:	GRIST MILLPOND	**Lab Number:**	L2351556
Project Number:	Not Specified	**Report Date:**	09/20/23

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:	GRIST MILLPOND	**Lab Number:**	L2351556
Project Number:	Not Specified	**Report Date:**	09/20/23

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were delivered directly from the sampling site but were not on ice.

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: Ashaley Moynihan

Title: Technical Director/Representative Date: 09/20/23

INORGANICS
&
MISCELLANEOUS

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

SAMPLE RESULTS

Lab ID: L2351556-01
Client ID: GRIST MILLPOND
Sample Location: SUDBURY, MA

Date Collected: 09/06/23 12:30
Date Received: 09/06/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	34		col/100ml	2.0	NA	2	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab										
Turbidity	2.2		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
Color, True	20		A.P.C.U.	5.0	--	1	-	09/08/23 08:18	121,2120B	ERB
Color, Apparent	25		A.P.C.U.	5.0	--	1	-	09/07/23 23:49	121,2120B	AAS
Alkalinity, Total	54.3		mg CaCO3/L	2.00	NA	1	-	09/19/23 09:28	121,2320B	MKT
pH (H)	8.13		SU	-	NA	1	-	09/07/23 17:49	1,9040C	AAS
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	09/17/23 21:40	09/19/23 11:50	121,4500NH3-BH	KEP
Nitrogen, Nitrate	2.43		mg/l	0.100	--	1	-	09/07/23 05:20	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	1.01		mg/l	0.300	--	1	09/18/23 21:14	09/19/23 17:57	121,4500NH3-H	AVT
Phosphorus, Total	0.047		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:37	121,4500P-E	EYA
Phosphorus, Soluble	0.033		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:48	121,4500P-E	EYA

Project Name: GRIST MILLPOND
Project Number: Not Specified
Lab Number: L2351556
Report Date: 09/20/23

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 Batch: WG1824334-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824429-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	09/07/23 02:54	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824560-1										
Turbidity	ND		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825041-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:30	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825160-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:42	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828476-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	09/17/23 21:40	09/19/23 11:35	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828611-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	09/18/23 21:14	09/19/23 17:49	121,4500NH3-H	AVT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1829114-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	09/19/23 10:33	121,2320B	MKT

Lab Control Sample Analysis

Batch Quality Control

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824429-2								
Nitrogen, Nitrate	99		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824560-2								
Turbidity	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824854-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825041-2								
Phosphorus, Total	98		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825160-2								
Phosphorus, Soluble	97		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828476-2								
Nitrogen, Ammonia	91		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828611-2								
Nitrogen, Total Kjeldahl	96		-		78-122	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1829114-2					
Alkalinity, Total	94	-	90-110	-	10

Matrix Spike Analysis
Batch Quality Control

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-4 QC Sample: L2351494-01 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	4.12	103		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-4 QC Sample: L2351609-02 Client ID: MS Sample												
Phosphorus, Total	0.024	0.5	0.530	101		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-4 QC Sample: L2351561-01 Client ID: MS Sample												
Phosphorus, Soluble	0.024	0.5	0.524	100		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828476-4 QC Sample: L2351459-02 Client ID: MS Sample												
Nitrogen, Ammonia	0.604	4	4.33	93		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828611-4 QC Sample: L2351896-02 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	0.757	8	6.47	**71**	Q	-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-4 QC Sample: L2351732-01 Client ID: MS Sample												
Alkalinity, Total	97.7	100	200	102		-	-		86-116	-		10

Lab Duplicate Analysis
Batch Quality Control

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-3 QC Sample: L2351494-01 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824560-3 QC Sample: L2351732-01 Client ID: DUP Sample						
Turbidity	0.68	0.64	NTU	6		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824854-2 QC Sample: L2351260-01 Client ID: DUP Sample						
pH	7.38	7.45	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824946-1 QC Sample: L2351759-01 Client ID: DUP Sample						
Color, Apparent	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-3 QC Sample: L2351609-02 Client ID: DUP Sample						
Phosphorus, Total	0.024	0.021	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825062-1 QC Sample: L2351561-01 Client ID: DUP Sample						
Color, True	37	37	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-3 QC Sample: L2351561-01 Client ID: DUP Sample						
Phosphorus, Soluble	0.024	0.020	mg/l	18		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828476-3 QC Sample: L2351459-02 Client ID: DUP Sample						
Nitrogen, Ammonia	0.604	0.650	mg/l	7		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828611-3 QC Sample: L2351896-02 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	0.757	0.706	mg/l	7		24

Lab Duplicate Analysis
Batch Quality Control

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-3 QC Sample: L2351732-01 Client ID: DUP Sample					
Alkalinity, Total	97.7	90.8	mg CaCO3/L	7	10

Project Name: GRIST MILLPOND
Project Number: Not Specified

Lab Number: L2351556
Report Date: 09/20/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2351556-01A	Bacteria Cup Na2S2O3 preserved	C	NA		27.8	Y	Absent		E-COLI-MF(.33)
L2351556-01B	Bacteria Cup Na2S2O3 preserved	C	NA		27.8	Y	Absent		E-COLI-MF(.33)
L2351556-01C	Plastic 250ml unpreserved/No Headspace	C	NA		27.8	Y	Absent		ALK-T-2320(14)
L2351556-01D	Plastic 950ml H2SO4 preserved	C	<2	<2	27.8	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2351556-01E	Plastic 250ml unpreserved	C	8	8	27.8	Y	Absent		FILTER(1)
L2351556-01F	Plastic 250ml unpreserved	C	8	8	27.8	Y	Absent		TURB-2130(2),PH-9040(1),NO3-4500(2)
L2351556-01G	Amber 250ml unpreserved	C	8	8	27.8	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2351556-01X	Plastic 250ml H2SO4 preserved Filtrates	C	NA		27.8	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	GRIST MILLPOND	**Lab Number:**	L2351556
Project Number:	Not Specified	**Report Date:**	09/20/23

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:	GRIST MILLPOND	**Lab Number:**	L2351556
Project Number:	Not Specified	**Report Date:**	09/20/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	GRIST MILLPOND	**Lab Number:**	L2351556
Project Number:	Not Specified	**Report Date:**	09/20/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: GRIST MILLPOND
Project Number: Not Specified
Lab Number: L2351556
Report Date: 09/20/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Serial_No:09202318:09

CHAIN OF CUSTODY

PAGE ____ OF ____

ALPHA ANALYTICAL

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 9/6/23

ALPHA Job #: L2351556

Client Information

Client: Water and Wetland

Address: 115 South Street
Upton MA 01568

Phone: 774-276-6098

Email: info@waterandwetland.com

Additional Project Information:

Project Information

Project Name: Grist Millpond

Project Location: Sudbury, MA

Project #:

Project Manager: James Lucasio

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

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

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Color A, Color T	E Coli-mf	Turb, NO3, pH	S-phos	NH3, TKN, T-phos	Alkalinity	Sample Comments	TOTAL # BOTTLES
51556-01	Grist Millpond	9/6/23	12:30	WS	JL									x	x	x	x	x	x		7

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do

Preservation
☐ Lab to do

Container Type	
Preservative	

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

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

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/6/23 1:07pm	[signature]	9/6/23 13:07

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

Bottle Order Request

Bottle Order # 435742

AUG-31-23 14:37:40

Acctnum : WATERANDWET
Company : Water & Wetland, LLC
Contact Name : Joe Onorato
Client PM :
Projectnum :
Projectname : Grist Mill Pond

Request date : 08/31/23
Status : NEED
Sample delivery date :
Order taken by : Tara Ferguson
Linked Call :
Projected TAT :

Completed by :
Delivery method : Courier
Date Completed :

Matrix : WATER
 # Samples : 1
Client IDs : 1

Analytes :
Soluble Phosphorus - SM 4500
Total Phosphorus - SM 4500
E. Coli Enumeration - SM 9213
Nitrate Nitrogen - SM 4500
Total Kjeldahl Nitrogen - SM 4500
Ammonia Nitrogen - SM 4500
Turbidity - EPA 180.1
True Color - SM 2120
Apparent Color - SM 2120
Total Alkalinity - SM 2320 (ug/l)

Container	Quantity	Analyte Label
Amber 500ml unpreserved	1	COLOR-A-2120 COLOR-T-2120
Bacteria Cup Na2S2O3 preserved	2	E-COLI-MF
Plastic 250ml unpreserved	1	TURB NO3
Plastic 250ml unpreserved	1	SPHOS-4500 (LF)
Plastic 950ml H2SO4 preserved	1	NH3 TKN TPHOS-4500
Plastic 250ml unpreserved/No Headspace	1	ALK-T-2320(fill to top)

Bottle Quantity Summary:

Amber 500ml unpreserved	1
Bacteria Cup Na2S2O3 preserved	2
Plastic 250ml unpreserved	2
Plastic 250ml unpreserved/No Headspace	1
Plastic 950ml H2SO4 preserved	1

Trip Blanks and Miscellaneous Field Blanks:

PLEASE PUT SAMPLES ON ICE
EXCEPT CANISTER OR BAG SAMPLES

Link to Alpha Sampling Reference Guide

Bottle Order Request

Bottle Order # 435742

AUG-31-23 14:37:40

Acctnum : *WATERANDWET*
Company : *Water & Wetland, LLC*
Contact Name : *Joe Onorato*
Client PM :
Projectnum :
Projectname : *Grist Mill Pond*

Request date : *08/31/23*
Status : *NEED*
Sample delivery date :
Order taken by : *Tara Ferguson*
Linked Call :
Projected TAT :

Completed by :
Delivery method : *Courier*

Special Shipping Requirements

Cooler	Dangerous	Certified	NJ Courier Pickup Label	Return Shipping Labels
X				

Pending Shipping Date(s)

okm

If you have questions on this Bottle Order, need to order additional bottles or schedule a Sample Pickup, please call a member of our Alpha team at 508-898-9220.

PLEASE PUT SAMPLES ON ICE
EXCEPT CANISTER OR BAG SAMPLES

Link to Alpha Sampling Reference Guide

ANALYTICAL REPORT

Lab Number:	L2351561
Client:	Water & Wetland, LLC 134 Ferry Street South Grafton, MA 01560
ATTN:	Joseph Onorato
Phone:	(888) 493-8526
Project Name:	CARDING MILLPOND
Project Number:	Not Specified
Report Date:	09/20/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

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

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2351561-01	CARDING MILLPOND	WATER	SUDBURY, MA	09/06/23 11:45	09/06/23

Project Name:	CARDING MILLPOND	**Lab Number:**	L2351561
Project Number:	Not Specified	**Report Date:**	09/20/23

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: CARDING MILLPOND **Lab Number:** L2351561
Project Number: Not Specified **Report Date:** 09/20/23

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were delivered directly from the sampling site but were not on ice.

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: Ashaley Moynihan

Title: Technical Director/Representative Date: 09/20/23

INORGANICS
&
MISCELLANEOUS

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

SAMPLE RESULTS

Lab ID: L2351561-01
Client ID: CARDING MILLPOND
Sample Location: SUDBURY, MA

Date Collected: 09/06/23 11:45
Date Received: 09/06/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Microbiological Analysis - Westborough Lab										
E. Coli (MF)	15		col/100ml	2.0	NA	2	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab										
Turbidity	9.9		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
Color, True	37		A.P.C.U.	5.0	--	1	-	09/08/23 08:18	121,2120B	ERB
Color, Apparent	60		A.P.C.U.	50	--	10	-	09/07/23 23:49	121,2120B	AAS
Alkalinity, Total	53.9		mg CaCO3/L	2.00	NA	1	-	09/19/23 09:31	121,2320B	MKT
pH (H)	8.96		SU	-	NA	1	-	09/07/23 17:49	1,9040C	AAS
Nitrogen, Ammonia	0.123		mg/l	0.075	--	1	09/17/23 22:02	09/19/23 09:02	121,4500NH3-BH	KEP
Nitrogen, Nitrate	0.492		mg/l	0.100	--	1	-	09/07/23 05:21	121,4500NO3-F	KAF
Nitrogen, Total Kjeldahl	0.895		mg/l	0.300	--	1	09/18/23 21:14	09/19/23 17:58	121,4500NH3-H	AVT
Phosphorus, Total	0.238		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:41	121,4500P-E	EYA
Phosphorus, Soluble	0.024		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:51	121,4500P-E	EYA

Project Name: CARDING MILLPOND
Project Number: Not Specified
Lab Number: L2351561
Report Date: 09/20/23

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 Batch: WG1824334-1										
E. Coli (MF)	ND		col/100ml	1.0	NA	1	-	09/06/23 17:24	121,9213D	JAI
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824429-1										
Nitrogen, Nitrate	ND		mg/l	0.100	--	1	-	09/07/23 02:54	121,4500NO3-F	KAF
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1824560-1										
Turbidity	ND		NTU	0.20	--	1	-	09/07/23 08:02	121,2130B	RDS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825041-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	09/08/23 07:21	09/08/23 10:30	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1825160-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	09/08/23 11:51	09/08/23 15:42	121,4500P-E	EYA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828477-1										
Nitrogen, Ammonia	ND		mg/l	0.075	--	1	09/17/23 22:02	09/19/23 08:47	121,4500NH3-BH	KEP
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1828611-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	--	1	09/18/23 21:14	09/19/23 17:49	121,4500NH3-H	AVT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1829114-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	09/19/23 10:33	121,2320B	MKT

Lab Control Sample Analysis

Batch Quality Control

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824429-2								
Nitrogen, Nitrate	99		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824560-2								
Turbidity	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1824854-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825041-2								
Phosphorus, Total	98		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1825160-2								
Phosphorus, Soluble	97		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828477-2								
Nitrogen, Ammonia	95		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1828611-2								
Nitrogen, Total Kjeldahl	96		-		78-122	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1829114-2					
Alkalinity, Total	94	-	90-110	-	10

Matrix Spike Analysis
Batch Quality Control

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-4 QC Sample: L2351494-01 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	4.12	103		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-4 QC Sample: L2351609-02 Client ID: MS Sample												
Phosphorus, Total	0.024	0.5	0.530	101		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-4 QC Sample: L2351561-01 Client ID: CARDING MILLPOND												
Phosphorus, Soluble	0.024	0.5	0.524	100		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828477-4 QC Sample: L2351494-03 Client ID: MS Sample												
Nitrogen, Ammonia	ND	4	3.67	92		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828611-4 QC Sample: L2351896-02 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	0.757	8	6.47	**71**	Q	-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-4 QC Sample: L2351732-01 Client ID: MS Sample												
Alkalinity, Total	97.7	100	200	102		-	-		86-116	-		10

Lab Duplicate Analysis
Batch Quality Control

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824429-3 QC Sample: L2351494-01 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824560-3 QC Sample: L2351732-01 Client ID: DUP Sample						
Turbidity	0.68	0.64	NTU	6		13
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824854-2 QC Sample: L2351260-01 Client ID: DUP Sample						
pH	7.38	7.45	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1824946-1 QC Sample: L2351759-01 Client ID: DUP Sample						
Color, Apparent	ND	ND	A.P.C.U.	NC		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825041-3 QC Sample: L2351609-02 Client ID: DUP Sample						
Phosphorus, Total	0.024	0.021	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825062-1 QC Sample: L2351561-01 Client ID: CARDING MILLPOND						
Color, True	37	37	A.P.C.U.	0		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1825160-3 QC Sample: L2351561-01 Client ID: CARDING MILLPOND						
Phosphorus, Soluble	0.024	0.020	mg/l	18		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828477-3 QC Sample: L2351494-03 Client ID: DUP Sample						
Nitrogen, Ammonia	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1828611-3 QC Sample: L2351896-02 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	0.757	0.706	mg/l	7		24

Lab Duplicate Analysis

Batch Quality Control

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1829114-3 QC Sample: L2351732-01 Client ID: DUP Sample					
Alkalinity, Total	97.7	90.8	mg CaCO3/L	7	10

Project Name: CARDING MILLPOND
Project Number: Not Specified

Lab Number: L2351561
Report Date: 09/20/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2351561-01A	Bacteria Cup Na2S2O3 preserved	D	NA		26.1	Y	Absent		E-COLI-MF(.33)
L2351561-01B	Bacteria Cup Na2S2O3 preserved	D	NA		26.1	Y	Absent		E-COLI-MF(.33)
L2351561-01C	Plastic 250ml unpreserved/No Headspace	D	NA		26.1	Y	Absent		ALK-T-2320(14)
L2351561-01D	Plastic 950ml H2SO4 preserved	D	<2	<2	26.1	Y	Absent		TKN-4500(28),TPHOS-4500(28),NH3-4500(28)
L2351561-01E	Plastic 250ml unpreserved	D	8	8	26.1	Y	Absent		FILTER(1)
L2351561-01F	Plastic 250ml unpreserved	D	8	8	26.1	Y	Absent		TURB-2130(2),PH-9040(1),NO3-4500(2)
L2351561-01G	Amber 250ml unpreserved	D	8	8	26.1	Y	Absent		COLOR-T-2120(2),COLOR-A-2120(2)
L2351561-01X	Plastic 250ml H2SO4 preserved Filtrates	D	NA		26.1	Y	Absent		SPHOS-4500(28)

*Values in parentheses indicate holding time in days

Project Name:	CARDING MILLPOND	**Lab Number:**	L2351561
Project Number:	Not Specified	**Report Date:**	09/20/23

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:	CARDING MILLPOND	**Lab Number:**	L2351561
Project Number:	Not Specified	**Report Date:**	09/20/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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.

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.

Report Format: Data Usability Report

Project Name:	CARDING MILLPOND	**Lab Number:**	L2351561
Project Number:	Not Specified	**Report Date:**	09/20/23

Data Qualifiers

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 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.)

Report Format: Data Usability Report

Project Name: CARDING MILLPOND
Project Number: Not Specified
Lab Number: L2351561
Report Date: 09/20/23

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

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

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

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

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 9/6/23

ALPHA Job #: L2351561

ALPHA ANALYTICAL

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

Project Information

Project Name: Carding Millpond
Project Location: Sudbury, MA
Project #:
Project Manager: James Lucasse
ALPHA Quote #:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Client Information

Client: Water and Wetland
Address: 115 South Street
Upton MA 01568
Phone: 774 276 6098
Email: info@water-and-wetland.com

Additional Project Information:

Regulatory Requirements & Project Information Requirements

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

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Color A, Color T
E. Coli - MF
Turb, NO3, pH
S-phos
NH3, TKN, T-phos
Alkalinity

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

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC	SVOC	METALS	METALS	EPH	VPH	PCB/PEST	TPH	Color A, Color T	E. Coli - MF	Turb, NO3, pH	S-phos	NH3, TKN, T-phos	Alkalinity	Sample Comments	TOTAL # BOTTLES
51561-01	Carding Millpond	9/6/23	11:45 pm	WS	JL									X	X	X	X	X	X		7

Container Type	Preservative
P= Plastic	A= None
A= Amber glass	B= HCl
V= Vial	C= HNO_3
G= Glass	D= H_2SO_4
B= Bacteria cup	E= NaOH
C= Cube	F= MeOH
O= Other	G= $NaHSO_4$
E= Encore	H = $Na_2S_2O_3$
D= BOD Bottle	I= Ascorbic Acid
	J = NH_4Cl
	K= Zn Acetate
	O= Other

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	9/6/23 1:07pm	[signature]	9/6/23 1307

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

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

SeSCRIPT Analysis Report: Hop Brook Ponds

Company: Water & Wetland
Address: 115 South Street, Upton MA 01568
Contact Person: Joe Onorato
Phone: (888)-493-8526
Email: info@waterandwetland.com

Project Name: Hop Brook Ponds
Surface Area: NA
Average depth: NA
Date Sample Received: 6/13/2023
SeSCRIPT Analysis: Algae Identification analysis

Algae ID Results
Hop Brook Ponds

Identification	Classification	Description	Density/Biomass (cells/mL)
Carding Mill Pond			
***Cryptomonas* sp.**	Cryptophyta-Cryptomonads	Single-celled, flagellated, planktonic	260

Other algae observed at densities less than 40 cells/mL: *Cyclotella* (Bacillariophyta); *Trachelomonas* (Euglenophyta)

Some particulate matter observed

Identification	Classification	Description	Density/Biomass (cells/mL)
Grist Mill Pond			
***Eunotia* sp.**	Bacillariophyta-Diatoms	Colonial, planktonic	1,200

Other algae observed at densities less than 40 cells/mL: *Navicula* (Bacillariophyta); *Oocystis* (Chlorophyta); *Trachelomonas* (Euglenophyta)

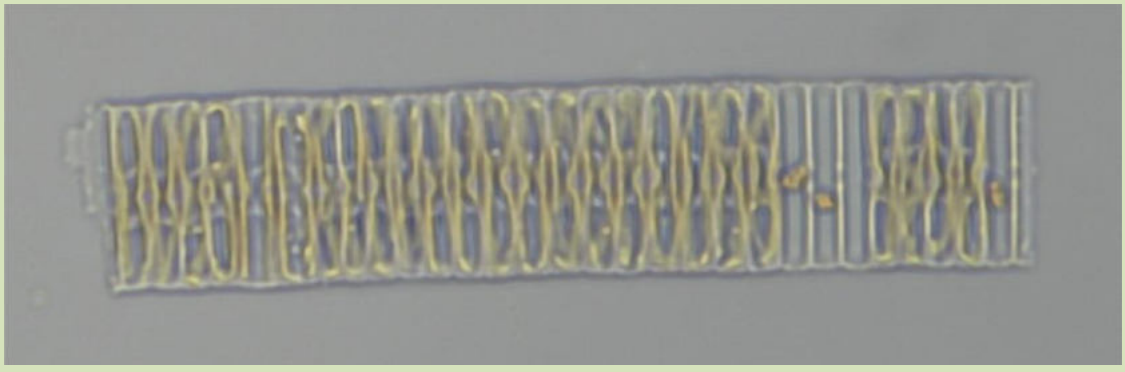
Some particulate matter observed

Algae ID Results
Hop Brook Ponds

Identification	Classification	Description	Density/Biomass (cells/mL)
Stearns Mill Pond			
***Closterium* sp.**	Streptophyta- Desmids	Single-celled, planktonic	< 40
***Oocystis* sp.**	Chlorophyta- Green algae	Colonial, planktonic	< 40

Other algae observed at densities less than 40 cells/mL: *Aulacoseira, Cocconeis, Cyclotella, Nitzschia* (Bacillariophyta); *Scenedesmus, Tetraselmis* (Chlorophyta); *Cryptomonas* (Cryptophyta); *Euglena, Trachelomonas* (Euglenophyta)

Some bacteria and particulate matter observed



SRTC SePRO Research & Technology Campus

WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

SeSCRIPT Analysis Report: Stearns Mill Pond

Company: Water & Wetland

Address: 115 South Street, Upton MA 01568

Contact Person: Joe Onorato

Phone: (888)-493-8526

Email: info@waterandwetland.com

Project Name: Stearns Mill Pond

Surface Area: NA

Average depth: NA

Date Sample Received: 9/8/2023

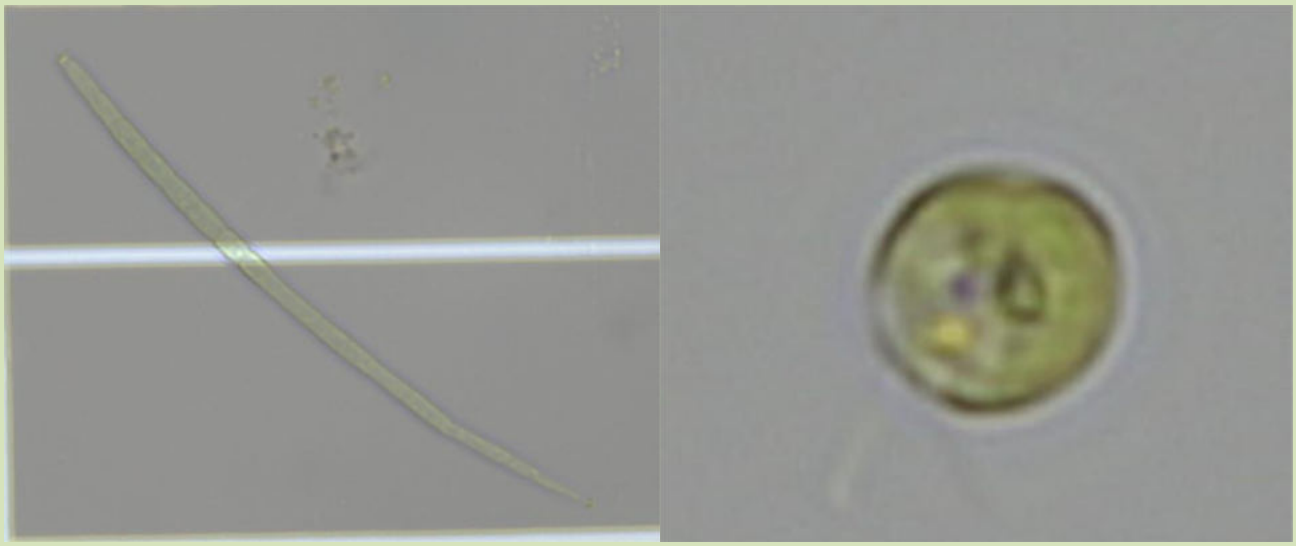
SeSCRIPT Analysis: Algae Identification analysis

Algae ID Results
Stearns Mill Pond

Identification	Classification	Description	Density/Biomass (cells/mL)
***Chlamydomonas* sp.**	Chlorophyta-Green algae	Single-celled, flagellated, planktonic	2,400
***Cuspidothrix* sp.**	Cyanophyta-Blue-green algae	Filamentous, planktonic, potential toxin producer	1,600

Other algae observed at densities less than 40 cells/mL: *Cyclotella* (Bacillariophyta); *Desmodesmus* (Chlorophyta); *Aphanocapsa, Planktolyngbya* (Cyanophyta); *Cryptomonas* (Cryptophyta)

Some particulate matter observed



SeSCRIPT Analysis Report: Grist Mill Pond

Company: Water & Wetland
Address: 115 South Street, Upton MA 01568
Contact Person: Joe Onorato
Phone: (888)-493-8526
Email: info@waterandwetland.com

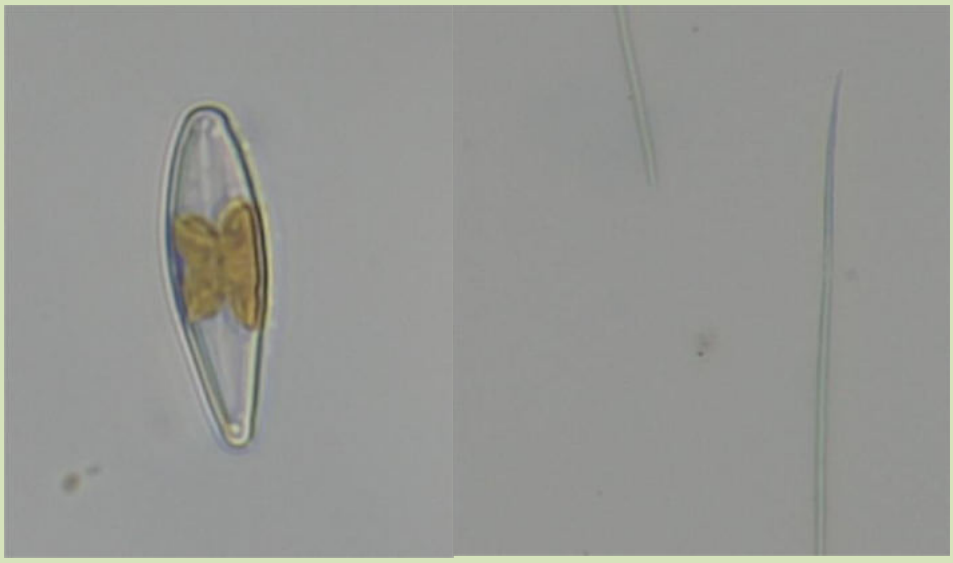
Project Name: Grist Mill Pond
Surface Area: NA
Average depth: NA
Date Sample Received: 9/8/2023
SeSCRIPT Analysis: Algae Identification analysis

Algae ID Results
Grist Mill Pond

Identification	Classification	Description	Density/Biomass (cells/mL)
***Cuspidothrix* sp.**	Cyanophyta-Blue-green algae	Filamentous, planktonic, potential toxin producer	1,300
***Gomphonema* sp.**	Bacillariophyta-Diatoms	Single-celled, planktonic	780

Other algae observed at densities less than 40 cells/mL: *Aulacoseira, Cyclotella, Navicula* (Bacillariophyta); *Aphanocapsa, Planktothrix* (Cyanophyta); *Trachelomonas* (Euglenophyta)

Some particulate matter observed



SRTC SePRO Research & Technology Campus

WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

SeSCRIPT Analysis Report: Carding Mill Pond

Company: Water & Wetland

Address: 115 South Street, Upton MA 01568

Contact Person: Joe Onorato

Phone: (888)-493-8526

Email: info@waterandwetland.com

Project Name: Carding Mill Pond

Surface Area: NA

Average depth: NA

Date Sample Received: 9/8/2023

SeSCRIPT Analysis: Algae Identification analysis

Algae ID Results
Carding Mill Pond

Identification	Classification	Description	Density/Biomass (cells/mL)
			★★
***Cuspidothrix* sp.**	Cyanophyta-Blue-green algae	Filamentous, planktonic, potential toxin producer	38,400
***Planktothrix* sp.**	Cyanophyta-Blue-green algae	Filamentous, planktonic/ periphytic, potential toxin and taste/odor producer	2,200

Other algae observed at densities less than 40 cells/mL: *Pandorina, Scenedesmus* (Chlorophyta); *Cryptomonas* (Cryptophyta)

Some particulate matter observed

SeSCRIPT* ALERT INDEX	EXPOSURE RISK	CYANOBACTERIA LEVELS (cells/mL)
★	Low	<20,000
★★	Moderate	20,000 to 100,000
★★★	High	>100,000
★★★★	Extreme	>100,000 with scums/mats
See the following Cyanobacteria Alert Guide for additional information		

Algae ID Pictures
Carding Mill Pond