

August 6, 2024

Dominic Meringolo  
SOLitude Lake Management  
590 Lake Street  
Shrewsbury, Massachusetts 01545

**Re: Aquatic Plant and Water Quality Monitoring and Reporting, Pre-treatment – 2024  
Westford, Massachusetts  
TRC Project No. 608215.0000.0000**

Dear Mr. Meringolo,

TRC Companies, Inc (TRC), was contracted by SOLitude Lake Management (SOLitude) to complete a pre-treatment monitoring program at seven ponds located within the Town of Westford (Town), as follows: Forge Pond, Old Mill/Graniteville Ponds, Burge's Pond, Long Sought-for Pond, Kennedy Pond, Keyes Pond, and Nabnasset Lake. The pre-treatment/early season monitoring program was completed to complement post-treatment monitoring at the seven ponds, conducted by TRC in fall 2023.

This report provides the findings of the monitoring program, builds on the findings of prior monitoring efforts, and makes recommendations for management of these water bodies in 2025.

#### **Pre-treatment/Early Season Monitoring**

The 2024 pre-treatment/early season monitoring program consisted of aquatic vegetation mapping and water quality sampling and was completed at each of the seven ponds on the following dates:

- June 17 – Nabnasset Lake and Long Sought-For Pond
- July 1 – Burge's Pond, Keyes Pond, Kennedy Pond and Old Mill/Graniteville Ponds
- July 11 – Forge Pond (including both the Westford and Littleton sides)

#### **Aquatic Vegetation Monitoring**

Aquatic plants were surveyed using comparable methods to 2023 (TRC 2023). Plant rakes were used to help assess aquatic invasive plant densities. Data was collected using a combination of field notes and a Tablet system capable of sub-meter accuracy.

Overall, the aquatic plant communities in the seven Westford ponds have been relatively consistent with previous years. Additional details on the results of the aquatic plant surveys are presented, by pond, in the following sections.

**Table 1. Aquatic Plants Observed during 2024 Pre-treatment/Early Season Surveys**

Common Name	Scientific Name	Native or Exotic	Keyes Pond	Long Sought-for Pond	Nabnasset Lake	Old Mill/Graniteville Ponds	Burge' s Pond	Kennedy Pond	Forge Pond
Big-leaf Pondweed	<i>Potamogeton amplifolius</i>	Native			X				
<b>Brittle Naiad</b>	<b><i>Najas minor</i></b>	<b>Exotic</b>							<b>X</b>
Bushy Naiad	<i>Najas flexilis</i>	Native						X	
Canadian Waterweed	<i>Elodea canadensis</i>	Native							X
Clasping-leaf Pondweed	<i>Potamogeton perfoliatus</i>	Native						X	
Common Bladderwort	<i>Utricularia macrorhiza</i>	Native							X
Common Duckweed	<i>Lemna minor</i>	Native			X	X			X
Coontail	<i>Ceratophyllum demersum</i>	Native	X			X			X
<b>Curly-leaf pondweed</b>	<b><i>Potamogeton crispus</i></b>	<b>Exotic</b>		<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>
<b>Eurasian Milfoil</b>	<b><i>Myriophyllum spicatum</i></b>	<b>Exotic</b>							<b>X</b>
<b>Fanwort</b>	<b><i>Cabomba caroliniana</i></b>	<b>Exotic</b>				<b>X</b>			<b>X</b>
Floating-leaf Pondweed	<i>Potamogeton epihydrus</i>	Native		X	X	X			X
Golden Hedge-hyssop	<i>Gratiola aurea</i>	Native						X	
Little Floating Bladderwort	<i>Utricularia radiata</i>	Native					X		X
Low Milfoil	<i>Myriophyllum humile</i>	Native					X		
Marsh Seedbox	<i>Ludwigia palustris</i>	Native						X	
Purple Bladderwort	<i>Utricularia purpurea</i>	Native	X						
Spikerush	<i>Eleocharis</i> sp.	Native					X	X	
Stonewort	<i>Nitella</i> sp.	Native			X				
Thinleaf Pondweed	<i>Potamogeton pusillus</i>	Native			X				X
<b>Variable-leaf Milfoil</b>	<b><i>Myriophyllum heterophyllum</i></b>	<b>Exotic</b>	<b>X</b>		<b>X</b>				<b>X</b>
Water Celery (Tapegrass)	<i>Vallisneria americana</i>	Native		X	X				X
<b>Water Chestnut</b>	<b><i>Trapa Natans</i></b>	<b>Exotic</b>			<b>X</b>				
Watershield	<i>Brasenia schreberi</i>	Native	X				X		X
Waterwort	<i>Elatine</i> sp.	Native						X	
White Water Lily	<i>Nymphaea odorata</i>	Native	X	X	X	X	X	X	X
Yellow Water Lily	<i>Nuphar lutea variegata</i>	Native	X	X	X	X	X	X	X
<b>Total</b>			<b>6</b>	<b>5</b>	<b>11</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>16</b>

### Keyes Pond

Six species of aquatic plants were observed in Keyes Pond during the 2024 pre-treatment survey, including one exotic invasive (Table 1). See Appendix A for overall aquatic plant cover (Figure 1) and overall aquatic plant biovolume (Figure 2). Of note, the invasive variable-leaf milfoil (*Myriophyllum heterophyllum*) was observed in three locations, in sparse to patchy beds, covering just over 1 acre (Figure 3).

### Old Mill/Graniteville Ponds

Five species of aquatic plants were observed at the Old Mill/Graniteville Ponds during the 2024 pre-treatment survey. Two exotic invasive species were also observed. Aquatic invasive fanwort (*Cabomba caroliniana*) and Curly-leaf pondweed (*Potamogeton crispus*) were observed during the pre-treatment survey. See Appendix A for overall aquatic plant cover (Figure 4) and overall aquatic plant biovolume (Figure 5).

Curly-leaf pondweed was found growing in sparse beds mainly in the lower basin but also along the western shoreline in the upper basin during the 2024 pre-treatment survey. The total area covered by curly-leaf pondweed was approximately 5.5 acres (Figure 6).

Fanwort was found growing in patchy to very dense beds covering 8 acres in both basins of the pond during the 2024 late season survey (Figure 7). This is consistent with the previous late season survey in 2023.



Dense bed of fanwort reaching the surface at Forge Pond during the 2024 pre-treatment survey.

Eurasian milfoil (*Myriophyllum spicatum*) and variable-leaf milfoil have previously been documented at both basins of the Old Mill/ Graniteville Ponds, however at low densities. During the 2024 pre-treatment survey these invasives were not observed. This may be due to the fact that the Fanwort coverage was so dense that it has out competed or obstructed the visual observations of these species.

### Nabnasset Lake

Eleven species of aquatic plants were observed at Nabnasset Lake during the pre-treatment survey (Table 1). See Appendix A for overall aquatic plant cover (Figure 8) and overall aquatic plant biovolume (Figure 9)

Aquatic invasive curly-leaf pondweed (*Potamogeton crispus*) was observed during the 2024 pre-treatment survey. Curly-leaf pondweed coverage was observed to be just over 10 acres and was found to be growing at sparse densities around the shoreline of the lake (Figure 10).

Water celery (*Vallisneria americana*), although not an exotic species, has been observed to grow at nuisance densities in past surveys; however, it was not observed to be widespread at Nabnasset Lake during the time of the 2024 pre-treatment survey (Figure 11). Water celery was generally present at low densities.

Variable-leaf milfoil was observed adjacent to the lake in the outlet of Shipley Swamp during the 2024 pre-treatment survey. This is consistent with previous years surveys at Nabnasset Lake. Brittle naiad (*Najas minor*) was not observed during the 2024 pre-treatment survey. In previous years, Brittle naiad was only observed in a few sparse locations. Water chestnut (*Trapa natans*) was observed during the 2024 pre-treatment survey, for the first time since the 2021 survey; however, it was only observed at one location and the TRC field crew were able to hand-pull the plants observed.

### Long Sought-for Pond

Five species of aquatic plants were observed at Long Sought-for Pond during the pre-treatment survey (Table 1). Total aquatic plant cover (Figure 12) and biovolume (Figure 13) are attached in Appendix A. Aquatic invasive curly-leaf pondweed was observed covering just over 10 acres during the 2024 pre-treatment survey (Figure 14). Curly-leaf pondweed was mainly observed growing at sparse densities along most of the shoreline of the pond.

Additionally, a native thinleaf pondweed species (*Potamogeton spp.*) has been a target species which has been documented at nuisance levels in past years surveys at Long Sought-for Pond, however, during the 2024 pre-treatment survey this species was not observed.

Eurasian milfoil which has not been observed since 2018, was not observed at Long Sought-for Pond during 2024 post-treatment monitoring.

### Kennedy Pond

Seven species of aquatic plants were observed in Kennedy Pond during the 2024 pre-treatment survey (Table 1). Similar to previous years, no aquatic invasive plant species were found. However, the exotic invasive common reed (*Phragmites australis*) was observed growing along portions of the shoreline. Total aquatic plant cover (Figure 15) and biovolume (Figure 16) are attached in Appendix A

### Forge Pond

Eighteen species of aquatic plants were observed during the 2024 pre-treatment survey of Forge Pond, including five exotic invasive species. See Appendix A for overall aquatic plant cover (Figure 17) and overall aquatic plant biovolume (Figure 18). The following exotic invasive species were observed: brittle naiad, curly-leaf pondweed, Eurasian milfoil, fanwort, and variable-leaf milfoil.

Curly-leaf pondweed which had not been observed during the 2023 late season survey, was observed covering just over 1 acre in the southern cove of the pond (Figure 19).

Eurasian milfoil was observed in sparse to dense beds covering approximately 58 acres of Forge Pond during the 2024 pre-treatment/early season survey (Figure 20). Eurasian milfoil was the dominant aquatic plant species during the 2024 pre-treatment/early season survey at Forge Pond.

Fanwort was observed in sparse to dense beds covering approximately 33 acres (Figure 21). Most beds were sparse, with a few areas of patchy to dense growth, which has been consistent with previous years surveys.

Variable-leaf milfoil covered approximately 20 acres mostly in sparse beds along much of the shoreline areas of Forge Pond during the 2024 pre-treatment/early season survey (Figure 22). This is an increase in areal extent from the previous survey in 2023.

Brittle naiad cover in Forge Pond was observed to be just over 1.5 acres in extent, occurring primarily as sparse growth (Figure 23).

### Burge's Pond

Six species of aquatic plants were found in Burge's Pond during the 2024 pre-treatment survey. No aquatic invasive plant species were observed in 2024 (Table 1), which is consistent with prior mapping of Burge's Pond dating back to post-treatment mapping completed in 2016. Total aquatic plant cover (Figure 24) and biovolume (Figure 25) are attached in Appendix A.



## **Water Quality Monitoring**

TRC conducted water quality sampling at three stations within each waterbody, including one location in the deepest portion of each waterbody. TRC measured the following parameters in the field: dissolved oxygen, temperature, turbidity, pH, and water clarity (Secchi disk).

TRC collected water samples for laboratory analysis of the following analytes: hardness, nitrate nitrogen, alkalinity, total phosphorus, total Kjeldahl nitrogen, and ammonia nitrogen. Water samples were analyzed by a Massachusetts-certified analytical laboratory. Notable water quality results are summarized in the following sections.

### Dissolved Oxygen

Each water body exhibited dissolved oxygen concentrations suitable for aquatic life near the surface. Dissolved oxygen conditions were at or above the state numerical criterion of 5.0 mg/L for warmwater fisheries at the surface level for all waterbodies during the 2024 pre-treatment surveys.

Pre-treatment water quality results also indicate low (hypoxia) to very low (anoxia) dissolved oxygen levels in the deeper waters of all the ponds sampled. This pattern was most extensive in Keyes Pond, Forge Pond and Old Mill/Graniteville Ponds. Extensive areas of persistently low dissolved oxygen concentrations are typically considered unsupportive of most aquatic life. Additionally, they may increase the likelihood of internal phosphorus release from pond sediments, which can compound management issues associated with eutrophication (nutrient enrichment).

### Turbidity

Turbidity varied somewhat within each of the water bodies. Surface turbidity was highest in Forge Pond and the highest overall turbidity observed was measured in bottom waters of Keye's Pond.

### Secchi Depth (Transparency)

Secchi depth is a measure of water transparency and may be reduced by suspended sediments, algal growth, or the presence of other organic matter in the water column. Reduced Secchi depths are typically associated with nutrient-enriched ponds, although this condition can also be caused by influx of turbid storm flows or wind events. During the 2024 pre-treatment survey, the shallowest Secchi depths were measured at Old Mill/Graniteville Ponds and Forge Pond, where water transparency was 2.0 m or less. The deepest Secchi depths (i.e., clearest water) were measured at Nabnasset Lake and Kennedy Pond, where transparency extended to 3.0 meters or above.

### pH, Hardness, and Alkalinity

Similar to previous sampling events, most of the locations sampled during post-treatment/late season monitoring were circumneutral (i.e., pH near 7.0). The most acidic pH was measured in Kennedy Pond and Burge's Pond, while the most basic pH measurements were collected in Nabnasset Lake.

Hardness and alkalinity tend to be naturally higher in the Merrimack River valley than adjacent parts of eastern Massachusetts, although they can also be influenced by human activity in the watershed as well as atmospheric acid deposition. These parameters varied substantially between ponds, but generally demonstrated similar patterns in variation with lower hardness values corresponding to lower alkalinity. This is not unexpected, as harder waters tend to have a higher alkalinity (also known as acid neutralizing capacity). Increased alkalinity suggests greater buffering capacity of the water (i.e., resistance to pH change). Ponds with low buffering capacity, such as Burge's Pond, may be susceptible to more abrupt swings in pH than those with higher alkalinity, such as Forge Pond and Old Mill/Graniteville Ponds.

### Phosphorus and Nitrogen

Phosphorus and nitrogen are both major nutrients fueling plant and algal growth. Of the two, phosphorus tends to be limiting nutrient in most New England freshwater systems. However, nitrogen levels can also impact the overall productivity of the system and type of algal growth favored, and may even influence the production of toxins in some

cyanobacteria. In general, high nutrient levels in the water column can contribute to algal blooms and excessive floating plant growth. High availability of nutrients in the sediments can contribute to excessive rooted plant growth.

During post-treatment/late season monitoring, total phosphorus concentrations were highest at Long Sought-for Pond. Algal blooms may occur even where total phosphorus levels are very low. However, they tend to be more frequent and are more likely to become problematic where concentrations regularly exceed 0.020 mg/L. Sediment release of phosphorus is apparent when bottom (hypolimnetic) concentrations are much higher than surface (epilimnetic) concentrations during the time of the year when the water body is stratified (warm surface water overlaying cold bottom water). This pattern is most apparent at Keye's Pond, Long Sought-for Pond, and Forge Pond. As indicated previously, release of sediment phosphorus may be aggravated by low dissolved oxygen concentrations at depth.

Overall nitrogen levels were highest at Nabnasset Lake, particularly the bottom location (NAB-B). This is consistent with prior years. Ammonia nitrogen, which is a component of TKN, was also highest in the bottom location (NAB-B) at Nabnasset Lake (Table 4). Nitrate nitrogen levels were greatest at Nabnasset Lake particularly the surface location (NAB-A). High levels of nitrate nitrogen may be an indication of septic loading or stormwater runoff.

**Table 2. Dissolved Oxygen Profiles at Deep Hole Locations during 2024 Pre-treatment/Early Season Monitoring**

Depth	Keyes Pond		Old Mill/Graniteville Ponds		Burge's Pond		Kennedy Pond		Long Sought-for Pond		Nabnasset Lake		Forge Pond	
	m	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%	mg/L	%
0.5	84.0	7.1	76.0	6.2	84.0	6.9	98.0	7.9	106.3	8.89	110.6	9.41	96.0	7.3
1.0	82.0	6.9	63.0	5.3	81.0	6.7	91.0	7.4	105.9	8.75	108.7	9.24	93.0	7.2
2.0	24.1	2.1	33.6	2.9	81.1	6.6	88.5	7.2	107.3	9.07	111.5	9.53	91.0	7.1
3.0	15.3	1.6	4.0	0.4	125.0	10.8	90.0	7.4	98.5	8.23	108.1	9.24	49.0	4.1
4.0	5.0	0.6	3.0	0.3	84.0	8.3	140.1	12.8	84.3	7.25	89.5	7.73	2.0	0.2
5.0	3.0	0.4			24.0	2.5	85.0	8.7	93.7	9.33	2.7	0.36	2.0	0.2
6.0	3.0	0.3			4.0	0.4	20.2	2.1	78.9	8.07	1.2	0.13	1.0	0.2
7.0							4.0	0.5	47.1	5.14			1.0	0.1
8.0							3.0	0.3	9.0	0.97			1.0	0.1
<b>Total depth (m)</b>	<b>6.0</b>		<b>5.0</b>		<b>6.0</b>		<b>7.0</b>		<b>9.0</b>		<b>8.0</b>		<b>8.0</b>	

**Table 3. Temperature Profiles at Deep Hole Locations during 2024 Pre-treatment/Early Season Monitoring**

Depth (m)	Keyes Pond	Old Mill/Graniteville Ponds	Burge’s Pond	Kennedy Pond	Long-Sought-for Pond	Nabnasset Lake	Forge Pond
0.5	24.7	26.0	26.0	25.8	24.9	23.8	28.4
1.0	24.5	24.3	26.0	25.6	24.7	23.8	28.3
2.0	21.3	22.4	25.6	25.4	23.9	23.7	28.2
3.0	13.7	21.9	21.3	25.0	23.6	23.1	24.2
4.0	10.1	16.1	15.6	19.1	22.5	21.1	19.7
5.0	7.8		13.1	14.4	16.9	10.9	13.4
6.0	7.8		11.7	11.0	13.9	11.0	10.8
7.0				9.8	11.8		10.0
8.0				9.5	10.7		10.1
<b>Total depth (m)</b>	<b>6.0</b>	<b>5.0</b>	<b>6.0</b>	<b>8.0</b>	<b>9.0</b>	<b>8.0</b>	<b>8.0</b>

**Table 4. Water Quality Parameters Collected During 2024 Pre-treatment/Early Season Monitoring**

Parameter	Units	Keyes Pond			Old Mill/Graniteville Ponds			Burge's Pond			Kennedy Pond			Long Sought-for Pond			Nabnasset Lake			Forge Pond		
Station ID		KEY-A	KEY-B	KEY-C	OLD-A	OLD-B	OLD-C	BUR-A	BUR-B	BUR-C	KEN-A	KEN-B	KEN-C	LSF-A	LSF-B	LSF-C	NAB-A	NAB-B	NAB-C	FOR-A	FOR-B	FOR-C
Location		Deep Hole		Outlet	Deep hole 1	Deep hole 2	Inlet	Deep Hole		In-pond	Deep Hole		In-pond	Deep Hole		Inlet	Deep Hole		Outlet	Deep Hole		Inlet
	Surface	Bottom	Surface		mid-depth	Surface		Bottom	Surface		Bottom	Surface		Bottom	Surface		Bottom	Surface		Bottom	Surface	
Total depth	m	6		0.5	5		1.0	6		2	8		1	8		0.5	7		2	10		3
Sample depth	m	0.5	5	0.5	0.5	2	0.5	0.5	5	0.5	0.5	7.0	0.5	0.5	7	0.5	0.5	7	0.5	0.5	7	0.5
Temperature	C	24.7	7.8	24.2	26.0	25.5	26.2	26.0	13.1	25.8	25.8	9.8	25.9	24.9	11.8	26.3	23.8	10.9	24.5	28.4	10.1	28.5
Dissolved oxygen	%	84.0	3.0	65.0	76.0	73.0	70.0	84.0	24.0	77.0	98.0	4.0	86.0	106.3	47.1	104.3	110.6	2.7	108.3	96	1.0	93
	mg/L	7.1	0.3	5.4	6.2	6.0	5.6	6.9	2.5	6.3	7.9	0.5	6.9	8.89	5.14	8.48	9.41	0.36	9.08	7.3	0.1	7.1
Turbidity	NTU	0.36	3.69	0.96	1.03	1.10	0.74	0.08	0.56	0.17	0.36	1.67	0.27	0.31	0.41	0.26	0.51	0.52	0.26	2.14	2.23	1.92
pH	SU	7.26	7.27	6.58	7.19	7.19	7.65	6.53	5.92	6.82	6.68	6.44	6.73	7.67	7.71	7.80	7.87	7.55	7.71	7.62	7.58	7.56
Secchi Depth	m	2.75		bottom (0.5)	1.75	1.75	bottom (1.5)	3.5		bottom (1.75)	4.0		bottom (1.0)	2.5		bottom (0.5)	3.0		bottom (2.0)	2.0		2.25
Hardness	mg/L	28.6	29.5	28.4	63.7	63.4	61.2	1.8	1.9	1.8	26.3	27.0	25.7	30.7	35.5	30.7	42.6	52.7	43.9	63.3	58.2	62.7
Alkalinity	mg/L	22	22	24	46	48	48	10	10	10	10	20	10	23	37	30	26	41	26	47	46	48
Total phosphorus	mg/L	0.028	0.053	0.030	0.044	0.030	0.027	0.019	0.028	0.016	0.016	0.052	0.016	0.020	0.217	0.016	0.016	0.298	0.016	0.021	0.034	0.023
Nitrate nitrogen	mg/L	0.01	0.01	0.01	0.20	0.18	0.20	0.04	0.01	0.05	0.01	0.01	0.01	0.04	0.03	0.04	0.75	0.13	0.71	0.01	0.01	0.01
Total Kjeldahl nitrogen	mg/L	0.76	1.01	0.77	0.56	0.78	0.65	0.63	0.73	0.62	0.51	0.66	0.52	0.28	0.84	0.36	0.52	3.25	0.62	0.31	0.45	0.50
Ammonia nitrogen	mg/L	0.09	0.09	0.05	0.025	0.019	0.08	0.025	0.025	0.025	0.08	0.06	0.025	0.10	0.53	0.15	0.025	0.64	0.10	0.025	0.06	0.025

Mr. Meringolo  
August 6, 2024

### **Future Monitoring**

In addition to the post-treatment/late season water quality and aquatic vegetation monitoring that will occurring later in the 2024 season at the seven Westford ponds, TRC will also plan on conducting a basic nutrient budget analysis for Forge Pond, in order to better understand the significance of the internal phosphorus loading in the context of external loading inputs and loss process outputs. At Nabnasset Lake, TRC is also planning on additional sediment coring and sampling to develop the necessary dosing for a sediment targeted nutrient inactivation program.

### **References**

TRC Companies, Inc. [TRC]. 2022. Aquatic Plant and Water Quality Monitoring and Reporting, Post-treatment, 2022. Prepared for Town of Littleton.

We appreciate the opportunity to work with you on this project. Please contact James Treacy at (781) 419-7742 if you have any questions.

Sincerely,

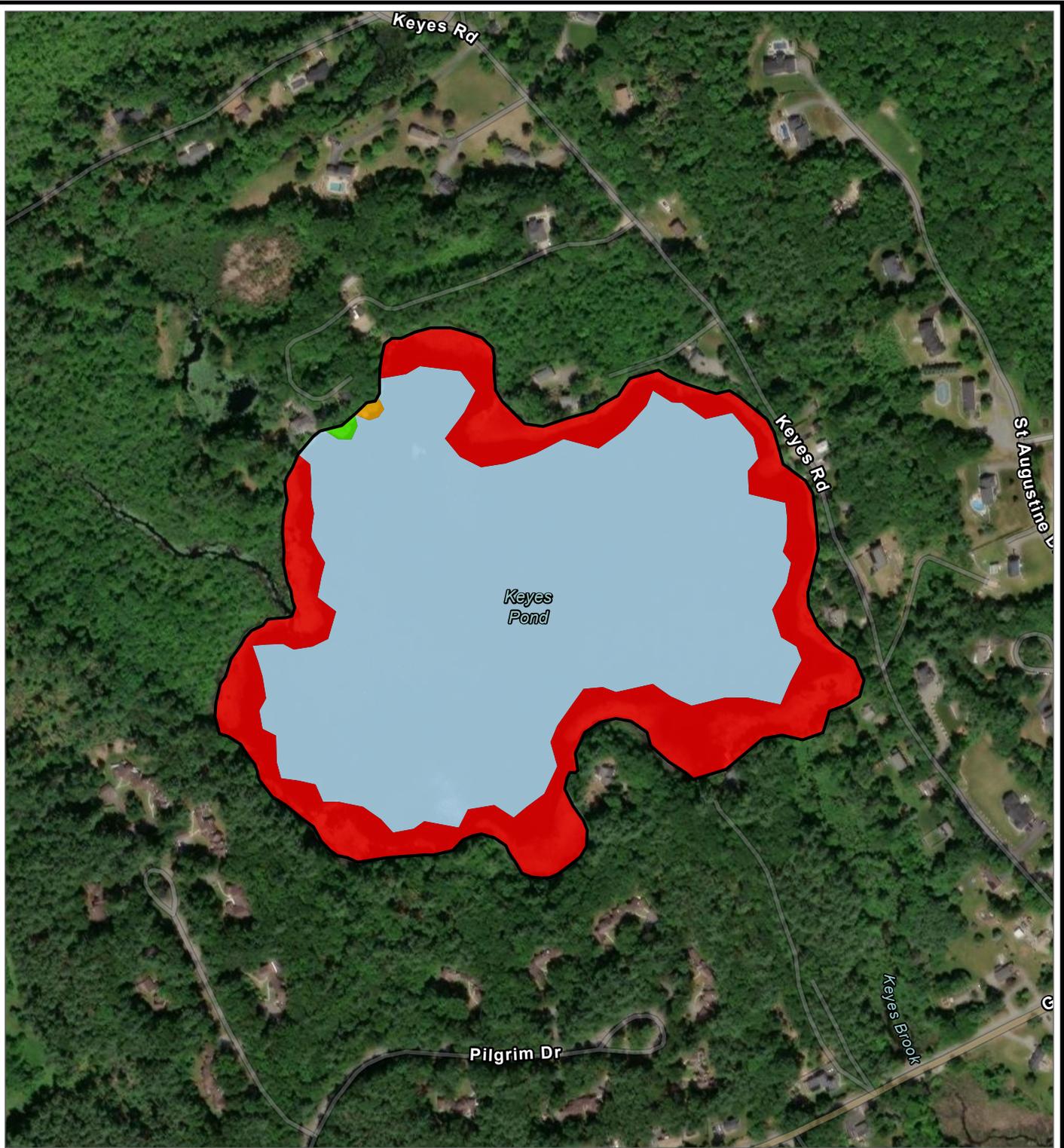
**TRC Companies, Inc**



James Treacy  
Staff Scientist

## Appendix A: Figures

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECT\SSOL\TJ\DELAKE\MANAGEMENT\608215 WESTFORD PONDS\2024\12-APRX\608215 WESTFORD\_PLANTMAPS\608215 WESTFORD\_PLANTMAPS\608215 WESTFORD\_PONDS\_PLANTCOVER

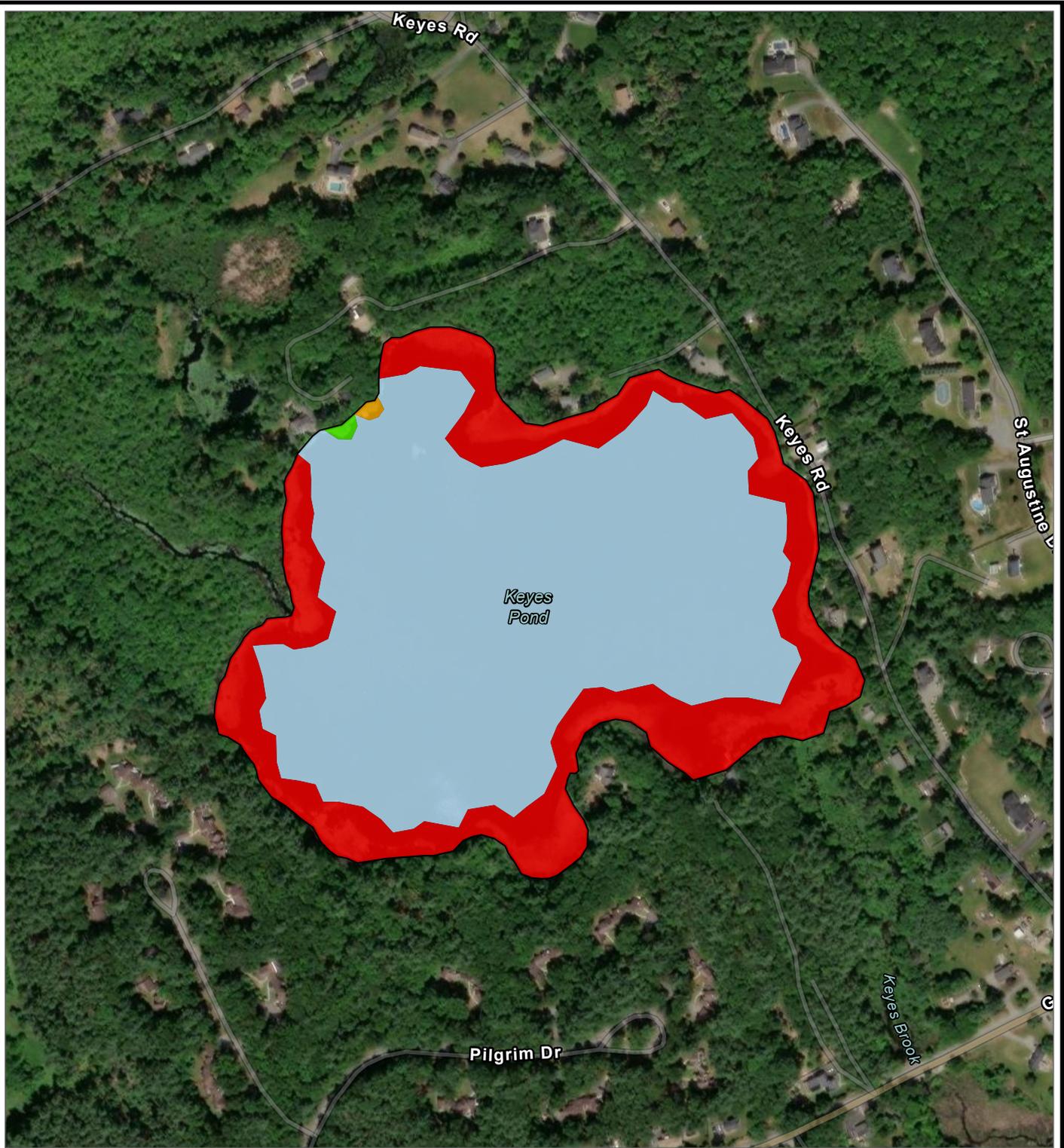


	SHORELINE
	TOWN BOUNDARY
<b>PLANT COVER</b>	
	0% (28.49 ACRES)
	1% - 25% (0.07 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0.07 ACRES)
	76% - 100% (11.66 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

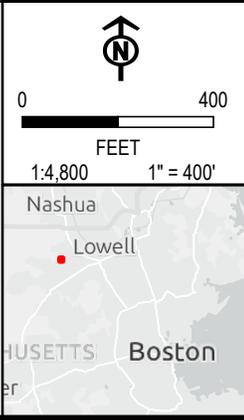
0 400  
 FEET  
 1:4,800 1" = 400'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER</b> <b>KEYES POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 1</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PONDS\_2024\12-APR\608215 WESTFORD PLANTMAPS\608215 WESTFORD PLANTMAPS\608215 WESTFORD PONDS\_BIOVOLUME

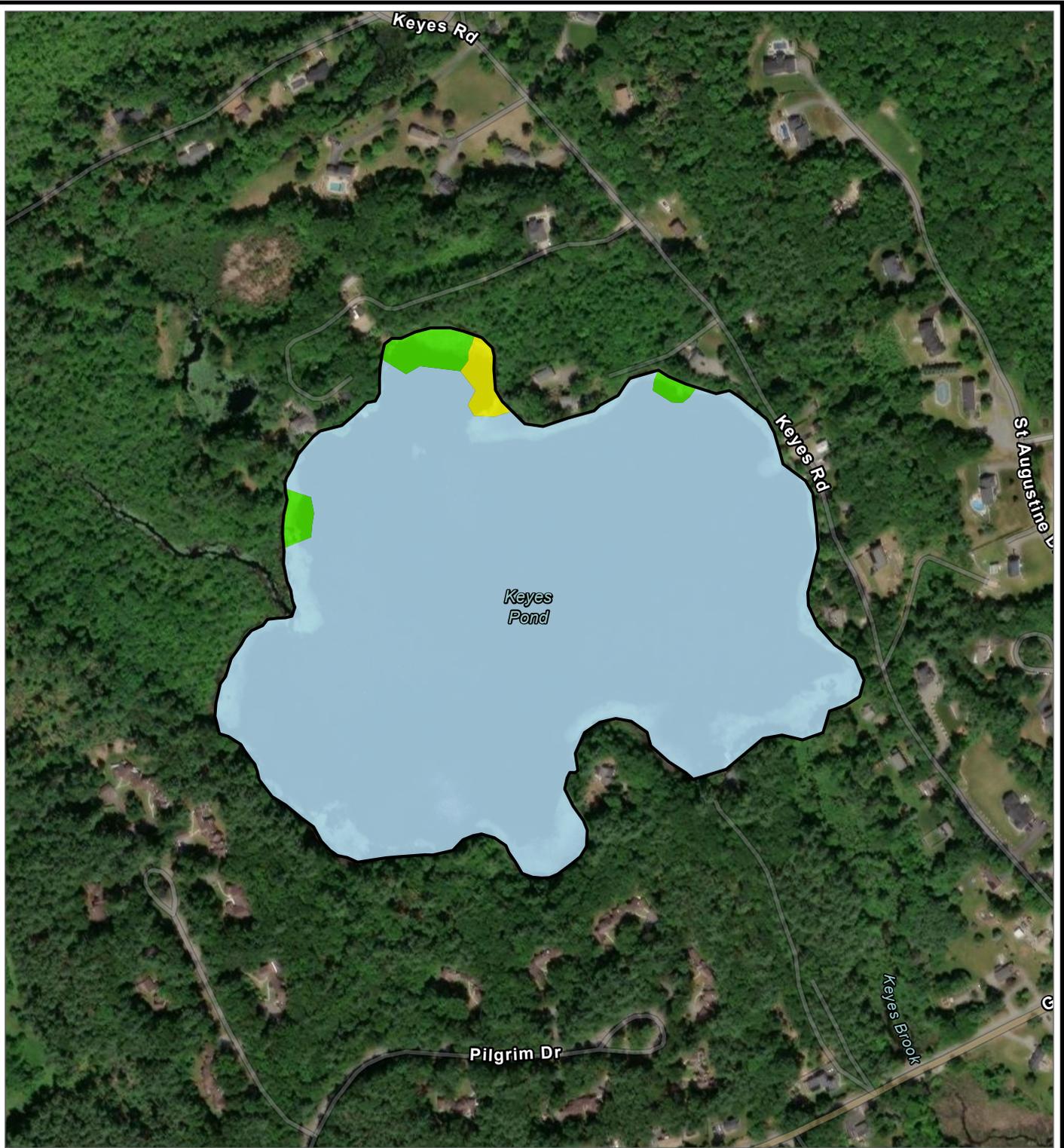


	SHORELINE
	TOWN BOUNDARY
<b>PLANT BIOVOLUME</b>	
	0% (28.49 ACRES)
	1% - 25% (0.07 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0.07 ACRES)
	76% - 100% (11.66 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

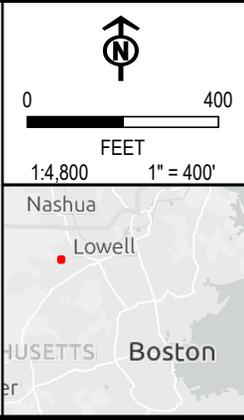


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME</b> <b>KEYES POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 2</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 11:17:58 AM: FILE PATH: T:\1-PROJECT\SSOLID\DELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\2024\2-APRX\608215 WESTFORD PLANTMAPS\608215 WESTFORD PONDS VARIABLE LEAF MILFOIL

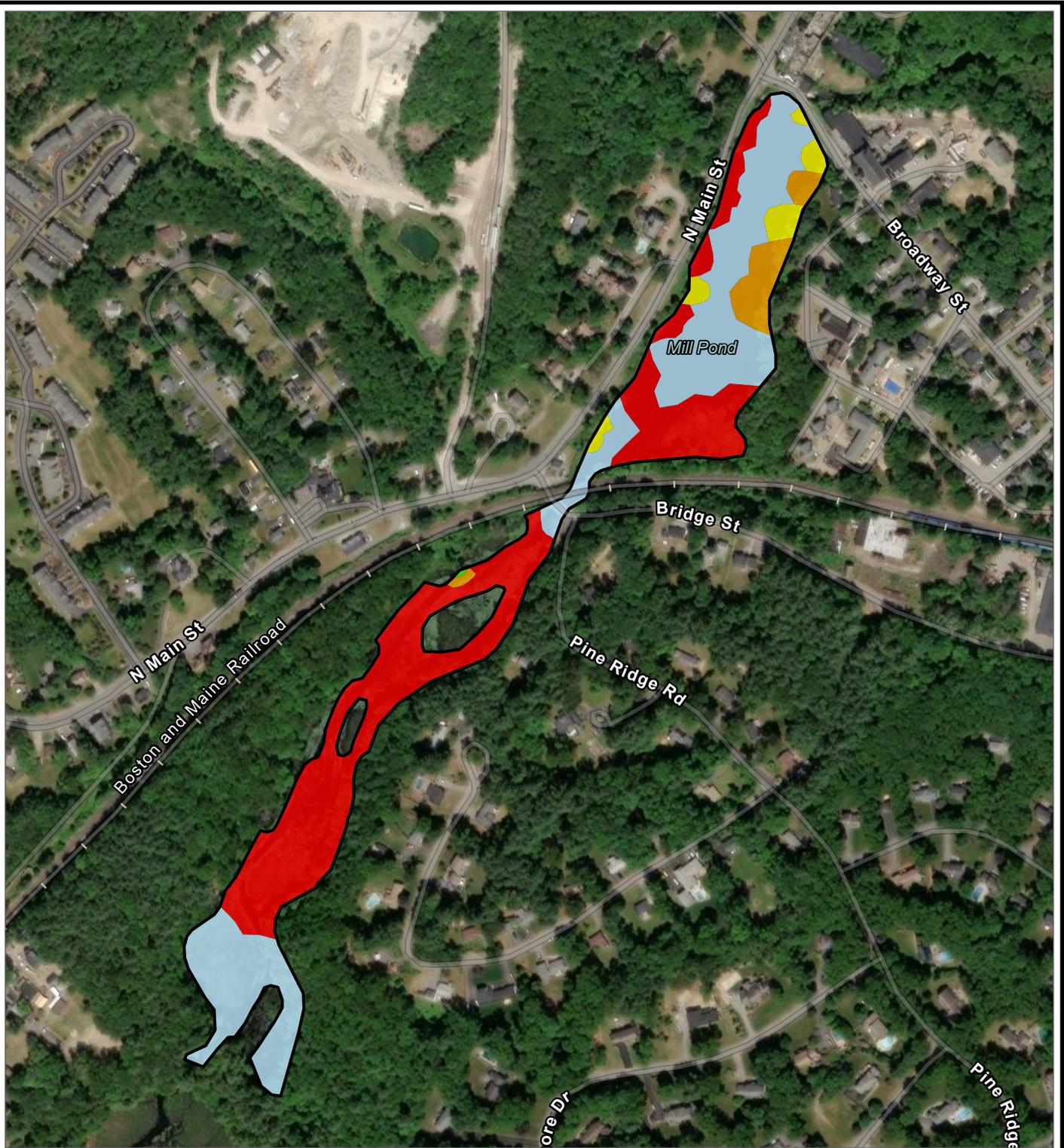


	SHORELINE
	TOWN BOUNDARY
<b>VARIABLE LEAF MILFOIL COVER</b>	
	0% (39.97 ACRES)
	1% - 25% (0.94 ACRES)
	26% - 50% (0.38 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	



PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>VARIABLE LEAF MILFOIL</b> <b>KEYES POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 3</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD PLANTMAPS.APRX. LAYOUT NAME: 608215 WESTFORD PONDS PLANTCOVER



**SHORELINE**  
 SHORELINE

**TOWN BOUNDARY**  
 TOWN BOUNDARY

**PLANT COVER**

- 0% (85.66 ACRES)
- 1% - 25% (0.01 ACRES)
- 26% - 50% (0.53 ACRES)
- 51% - 75% (0.78 ACRES)
- 76% - 100% (6.81 ACRES)

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

0 400  
 FEET  
 1:4,800 1" = 400'

Nashua  
 Lowell  
 MASSACHUSETTS Boston

PROJECT:  
**WESTFORD PONDS PLANT MAPPING 2024**  
 WESTFORD, MASSACHUSETTS

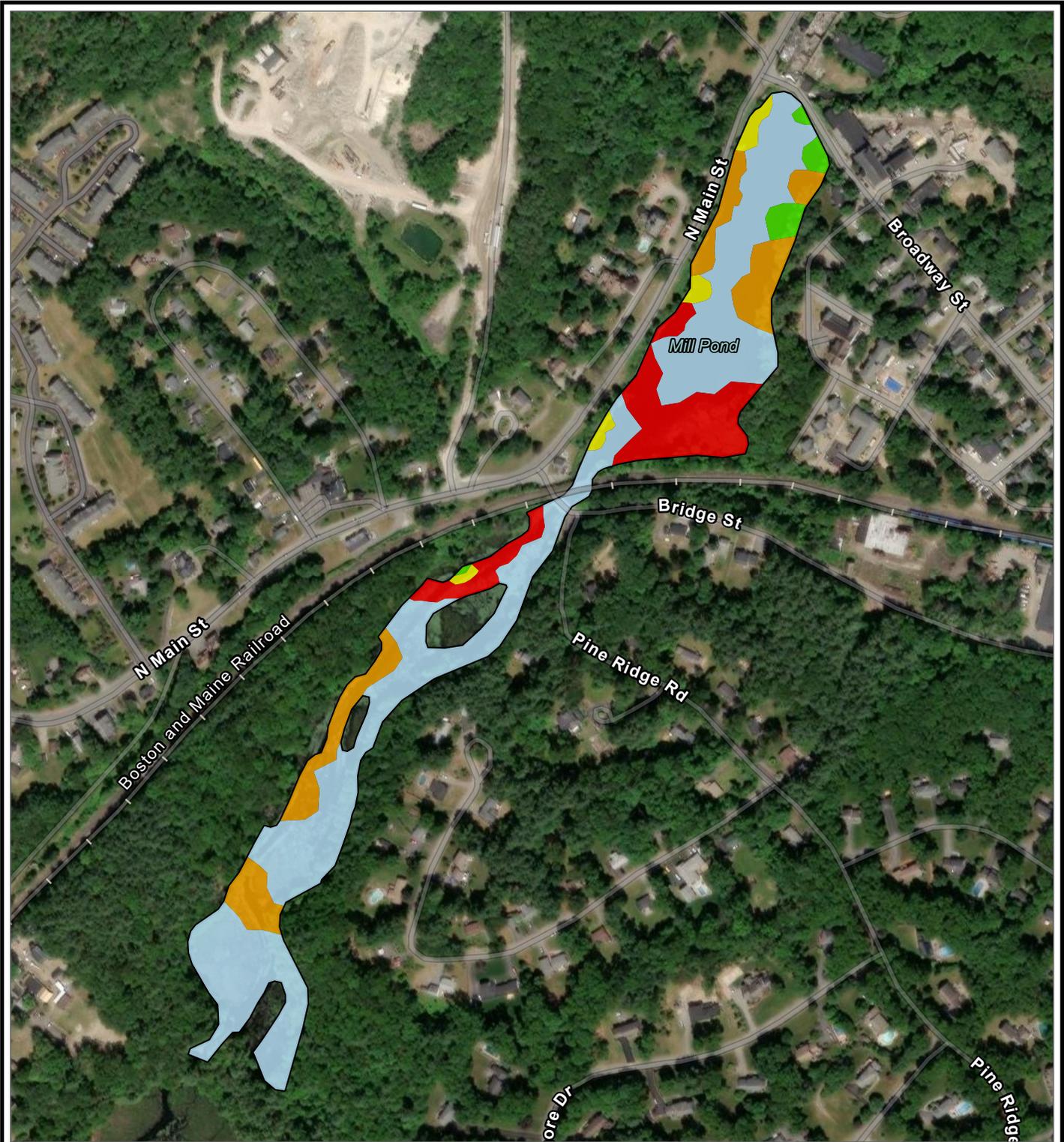
TITLE:  
**PLANT COVER**  
**MILL POND**

DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 4</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	

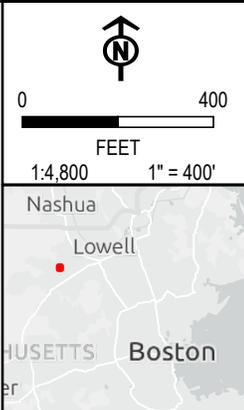
404 WYMAN STREET  
 SUITE 375  
 WALTHAM, MA 02451  
 PHONE: 781.419.7696

FILE: 608215\_WESTFORD\_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
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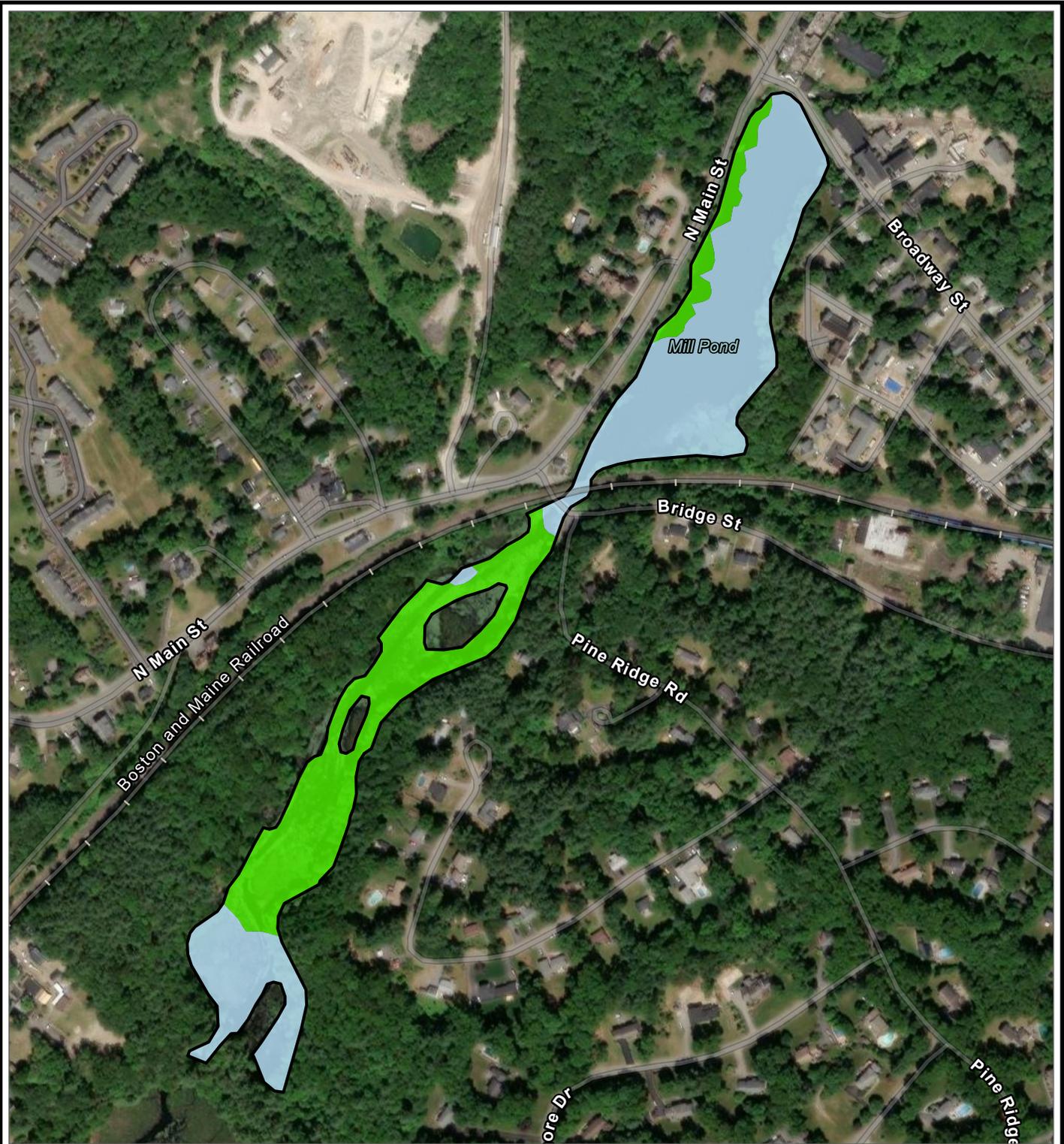
-  SHORELINE
-  TOWN BOUNDARY
- PLANT BIOVOLUME**
-  0% (8.76 ACRES)
-  1% - 25% (0.37 ACRES)
-  26% - 50% (0.35 ACRES)
-  51% - 75% (2.21 ACRES)
-  76% - 100% (2.11 ACRES)



PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME</b> <b>MILL POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 5</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
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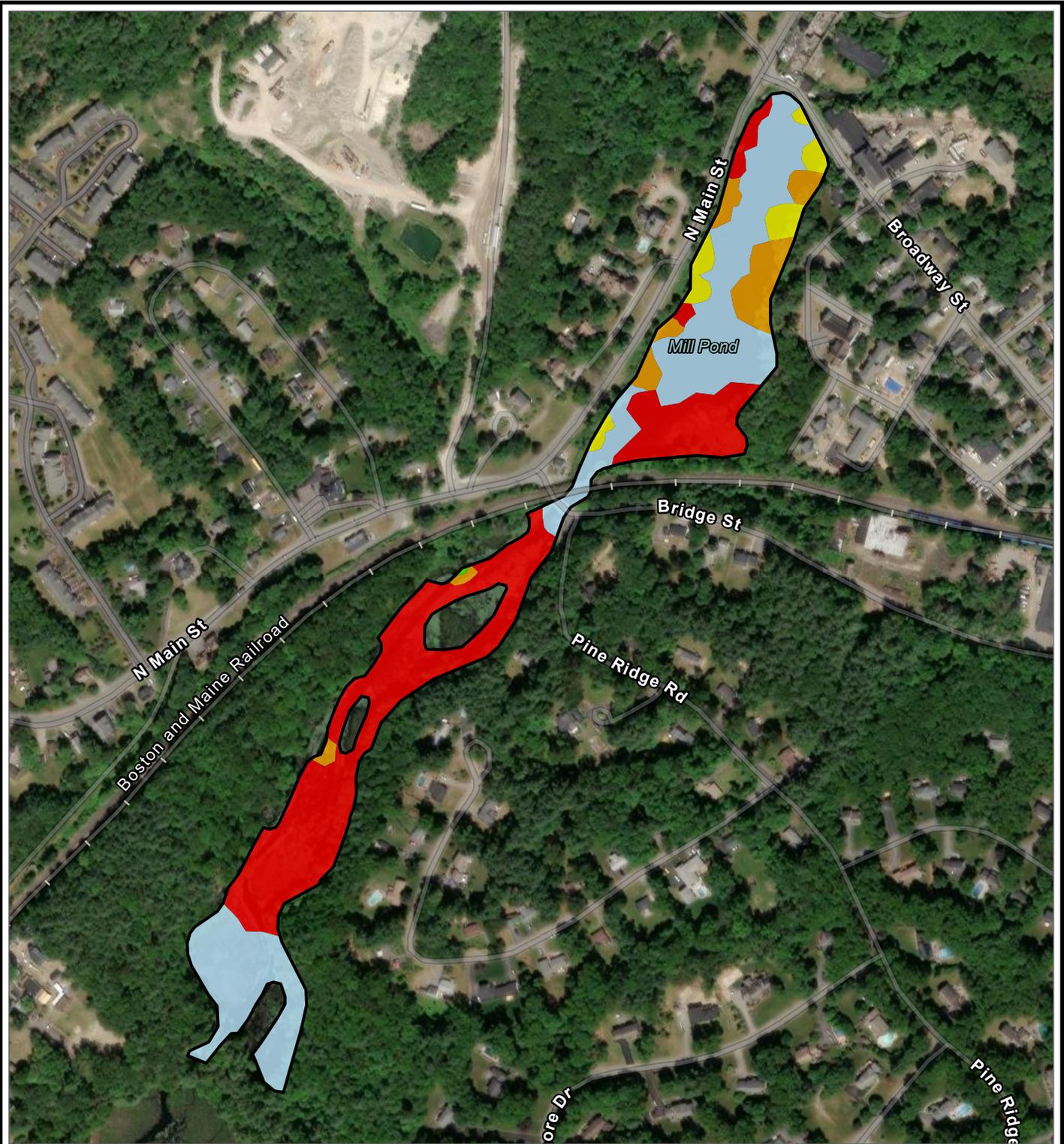


	SHORELINE
	TOWN BOUNDARY
<b>CURLY LEAF PONDWEED COVER</b>	
	0% (8.39 ACRES)
	1% - 25% (5.41 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

0 400  
 FEET  
 1:4,800 1" = 400'

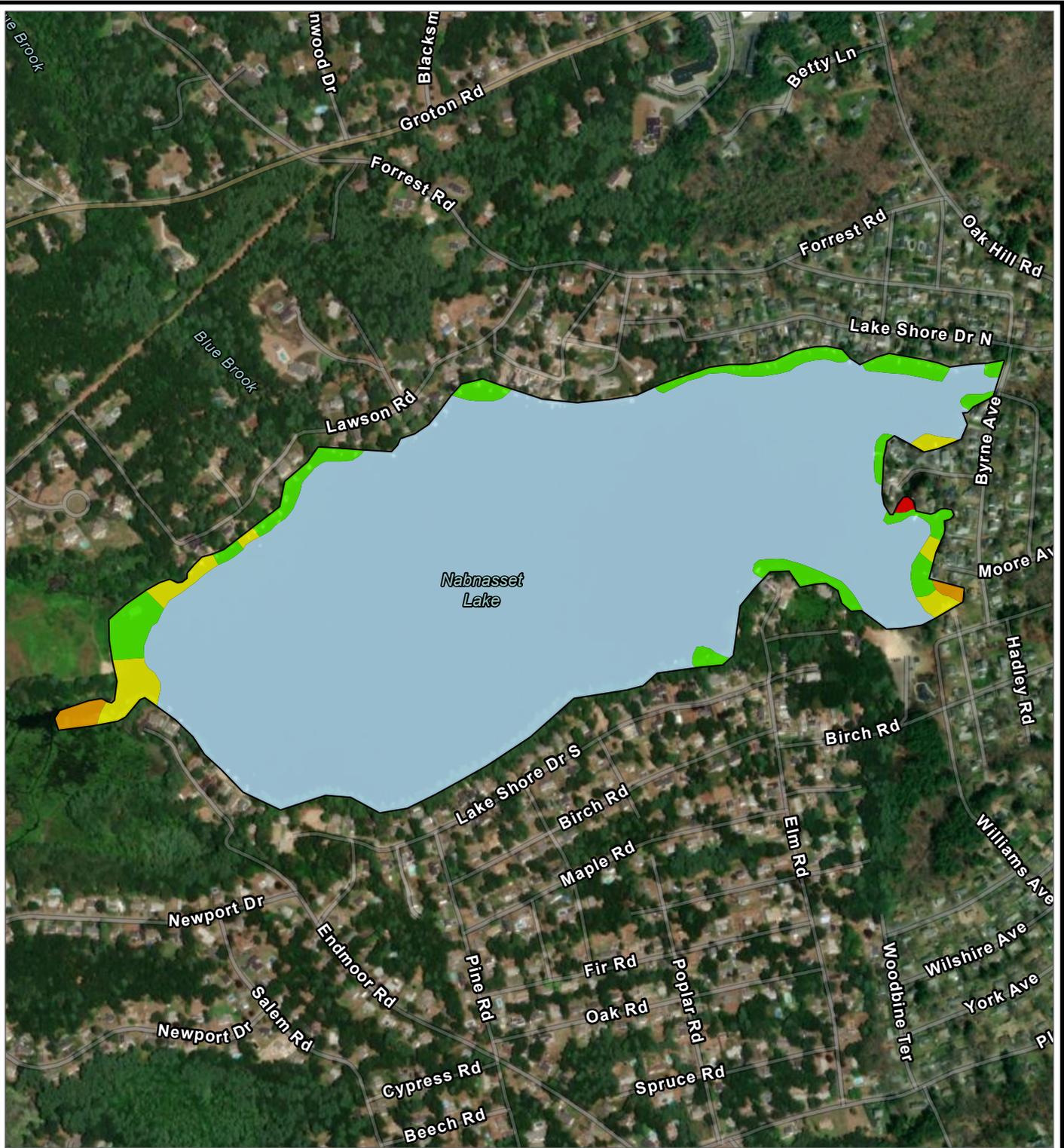
PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>CURLY LEAF PONDWEED</b> <b>MILL POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 6</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 11:17:58 AM: FILE PATH: T:\1-PROJECTS\SOLIDLAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\APRX: LAYOUT NAME: 608215 WESTFORD PONDS\_FANWORT



<p> SHORELINE</p> <p> TOWN BOUNDARY</p>	<p></p> <p>0 400 FEET</p> <p>1:4,800 1" = 400'</p>	<p>PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS</p>	
<p><b>FANWORT COVER</b></p> <p> 0% (5.71 ACRES)</p> <p> 1% - 25% (0.01 ACRES)</p> <p> 26% - 50% (0.64 ACRES)</p> <p> 51% - 75% (1.19 ACRES)</p> <p> 76% - 100% (6.25 ACRES)</p> <p>BASE MAP: ESRI WORLD IMAGERY, 2022 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS</p>	<p>Nashua Lowell MASSACHUSETTS Boston</p>	<p>TITLE: <b>FANWORT MILL POND</b></p> <p>DRAWN BY: E. YPSILANTIS PROJ. NO.: 608215</p> <p>CHECKED BY: S. DEHAINAUT</p> <p>APPROVED BY: J. TREACY</p> <p>DATE: AUGUST 2024</p>	
<p><b>FIGURE 7</b></p> <p></p> <p>404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696</p> <p>FILE: 608215_WESTFORD_PLANTMAPS</p>			

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:41:11 AM; FILE PATH: T:\1-PROJECTS\WESTFORDPONDS\_2024-SURVEYS\_FIGS\APRX\_680215\_NABNASSET\_FIG01\_COVER



	SHORELINE
	TOWN BOUNDARY
<b>PLANT COVER</b>	
	0% (116.0 ACRES)
	1% - 25% (7.12 ACRES)
	26% - 50% (2.62 ACRES)
	51% - 75% (0.71 ACRES)
	76% - 100% (0.10 ACRES)
BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020	
DATA SOURCES: TRC, GPS DATA, 6/17/2024	

0 350 700  
 FEET  
 1:8,400 1" = 700'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER</b> <b>NABNASSET LAKE</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 8</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:41:11 AM; FILE PATH: T:\1-PROJECTS\WESTFORDPONDS\_2024-SURVEYS\_FIGS\APRX\_680215\_NABNASSET\_FIG02\_BIOVOL

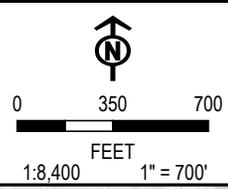


-  SHORELINE
-  TOWN BOUNDARY

**PLANT BIOVOLUME**

-  0% (116.0 ACRES)
-  1% - 25% (8.90 ACRES)
-  26% - 50% (1.3 ACRES)
-  51% - 75% (0.29 ACRES)
-  76% - 100% (0 ACRES)

BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020  
 DATA SOURCES: TRC, GPS DATA, 6/17/2024



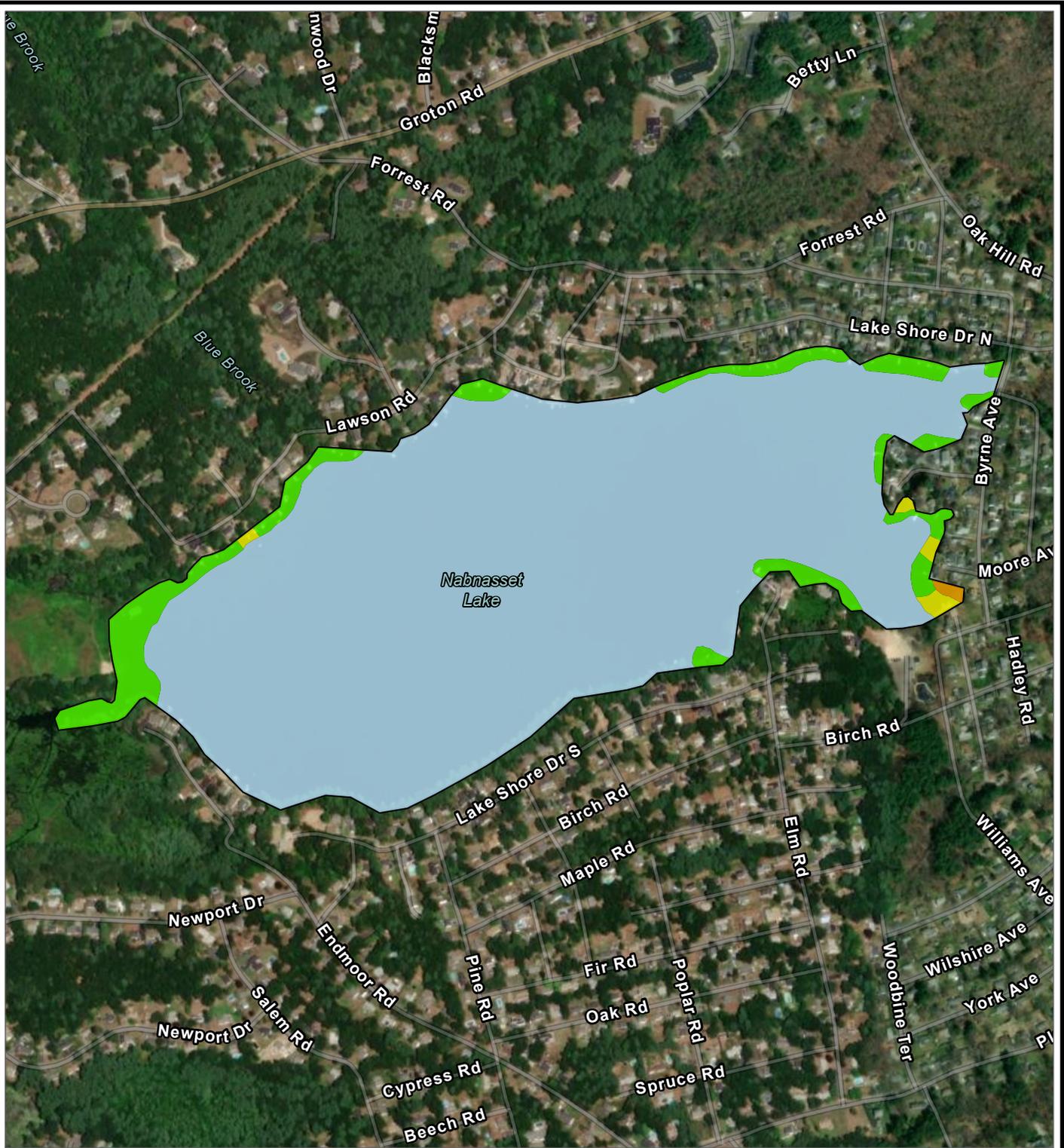
PROJECT:  
**WESTFORD PONDS PLANT MAPPING 2024**  
 WESTFORD, MASSACHUSETTS

TITLE:  
**PLANT BIOVOLUME**  
**NABNASSET LAKE**

DRAWN BY:	K. BACHAND	PROJ. NO.:	680215
CHECKED BY:	A. OCHS	<b>FIGURE 9</b>	
APPROVED BY:	J. TREACY		
DATE:	AUGUST 2024		

	404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696
	FILE: 680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
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**SHORELINE**  
 SHORELINE

**TOWN BOUNDARY**  
 TOWN BOUNDARY

**CURLY LEAF PONDWEED COVER**

	0% (116.0 ACRES)
	1% - 25% (9.66 ACRES)
	26% - 50% (0.71 ACRES)
	51% - 75% (0.19 ACRES)
	76% - 100% (0 ACRES)

BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020  
 DATA SOURCES: TRC, GPS DATA, 6/17/2024

0 350 700  
 FEET  
 1:8,400 1" = 700'

Nashua  
 Lowell  
 MASSACHUSETTS Boston

PROJECT:  
**WESTFORD PONDS PLANT MAPPING 2024**  
 WESTFORD, MASSACHUSETTS

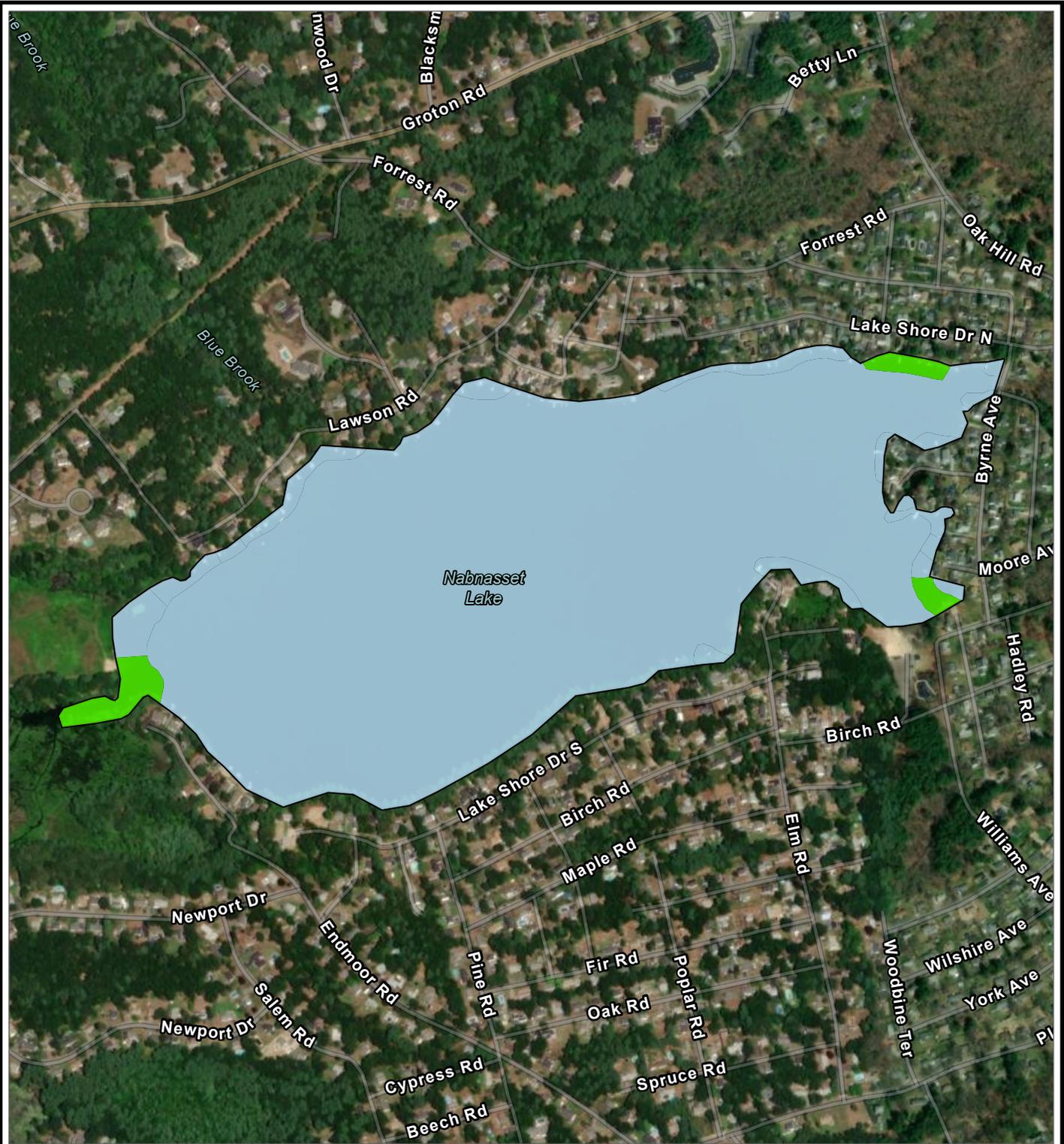
TITLE:  
**CURLY LEAF PONDWEED**  
**NABNASSET LAKE**

DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 10</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	

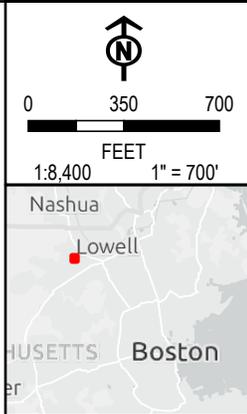
404 WYMAN STREET  
 SUITE 375  
 WALTHAM, MA 02451  
 PHONE: 781.419.7696

FILE: 680215\_WESTFORDPONDS\_2024-SURVEYS\_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
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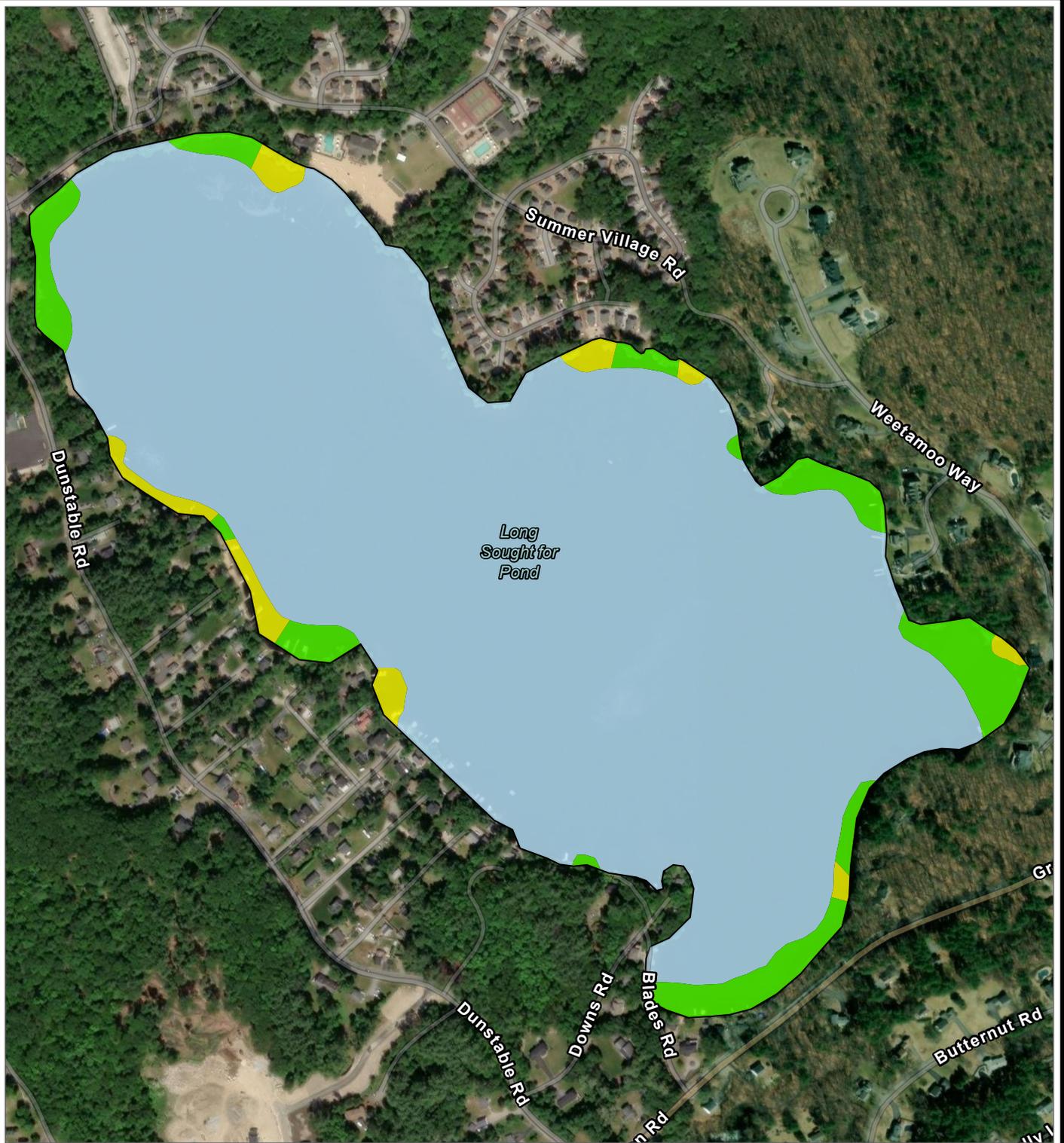


	SHORELINE
	TOWN BOUNDARY
<b>WATER CELERY COVER</b>	
	0% (123.6 ACRES)
	1% - 25% (2.97 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020 DATA SOURCES: TRC, GPS DATA, 6/17/2024	

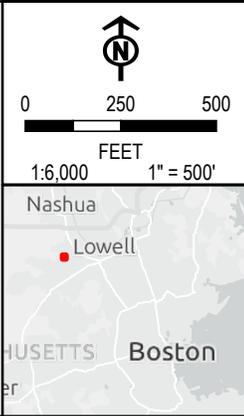


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>WATER CELERY NABNASSET LAKE</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 11</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
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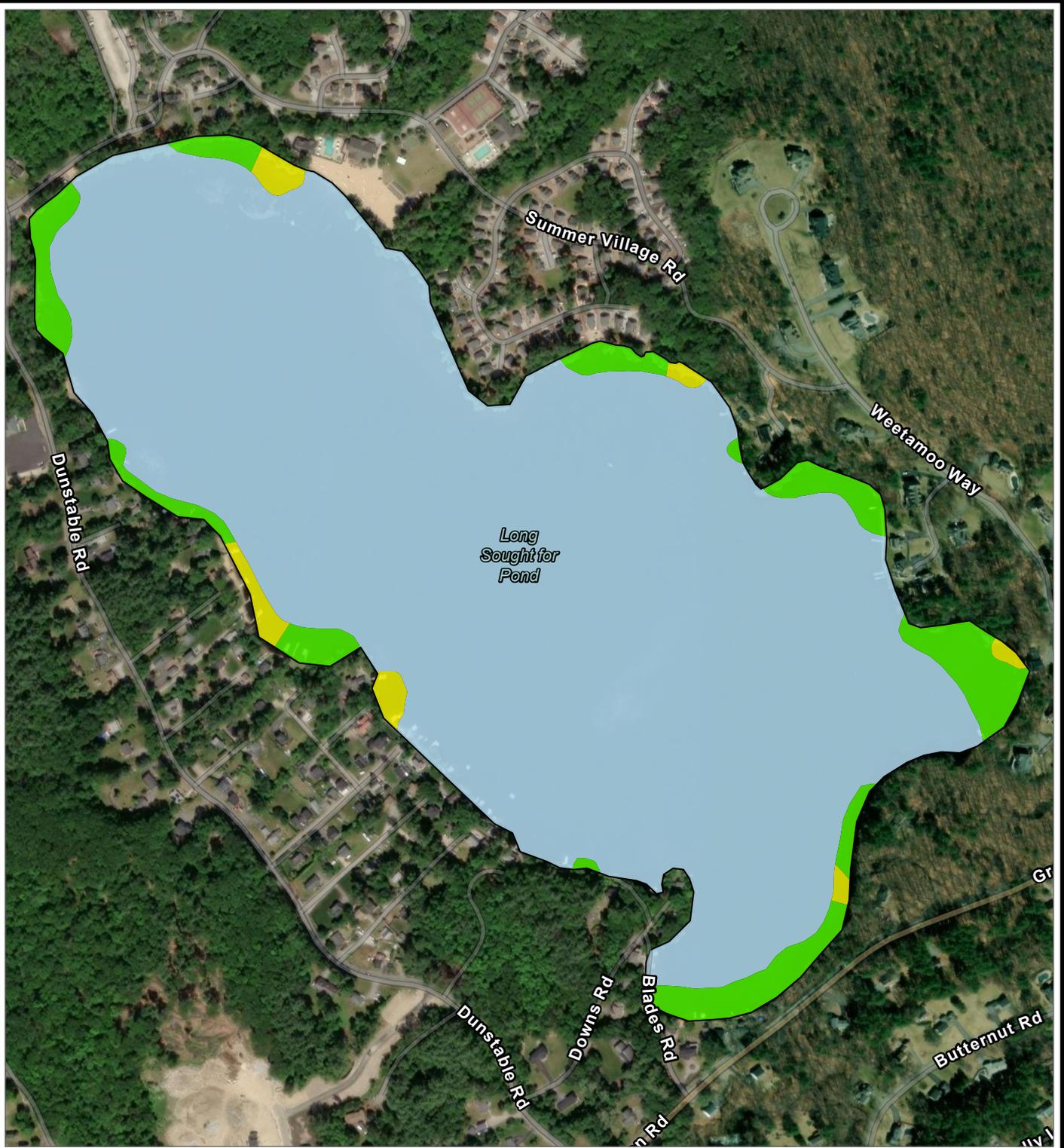


	SHORELINE
	TOWN BOUNDARY
<b>PLANT COVER</b>	
	0% (99.4 ACRES)
	1% - 25% (7.70 ACRES)
	26% - 50% (2.45 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020	
DATA SOURCES: TRC, GPS DATA, 6/17/2024	

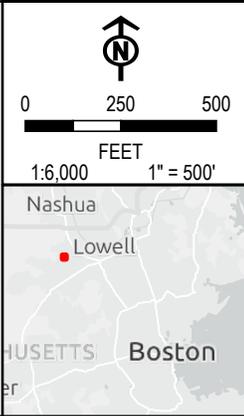


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER</b> <b>LONG SOUGHT FOR POND</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 12</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:41:11 AM; FILE PATH: T:\1-PROJECTS\WESTFORDPONDS\680215 WESTFORDPONDS\_2024-SURVEYS\_FIGS\APRX; LAYOUT NAME: 680215 LONGSOUGHTFOR FIG06 BIOVOL

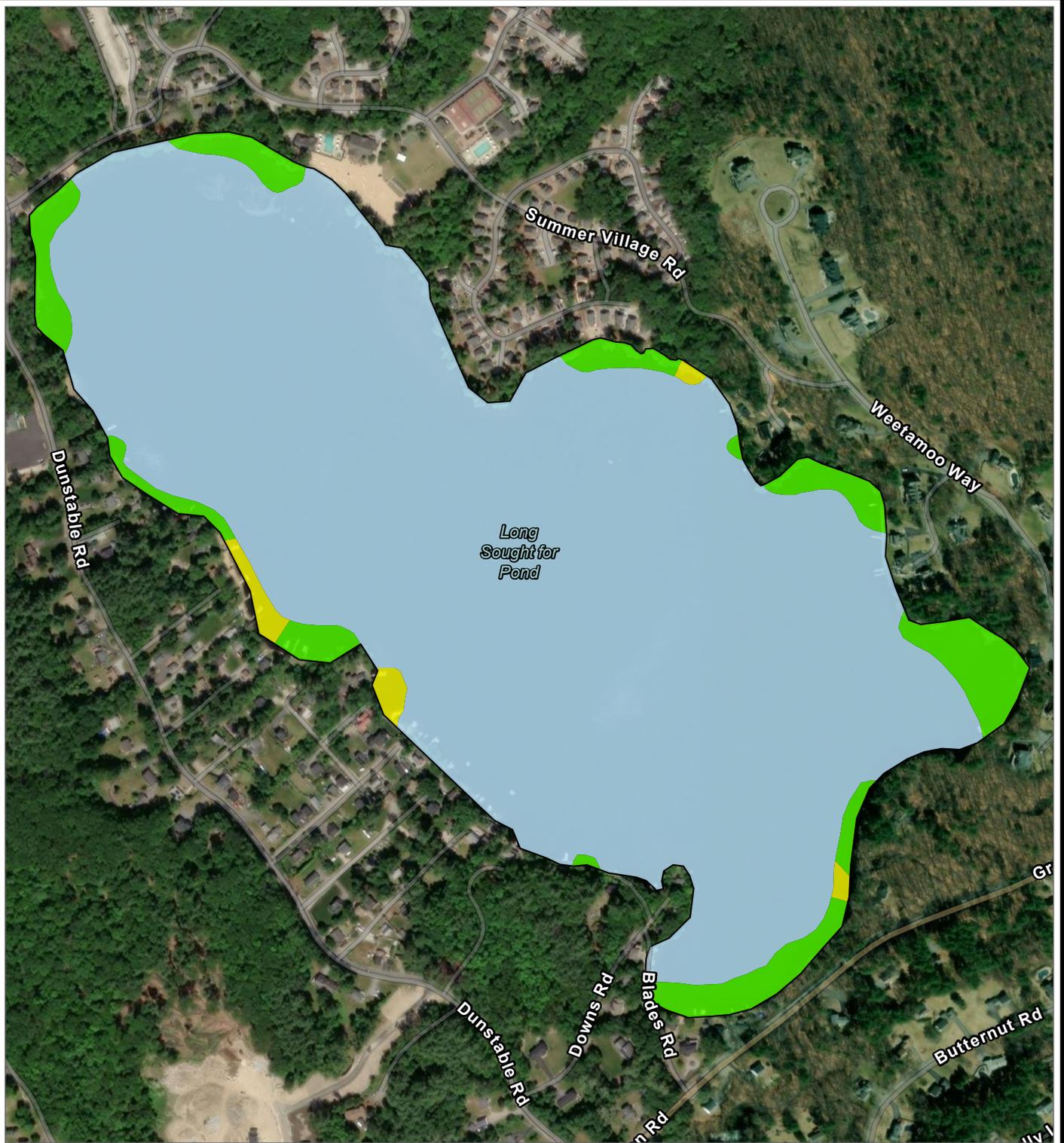


	SHORELINE
	TOWN BOUNDARY
<b>PLANT BIOVOLUME</b>	
	0% (99.4 ACRES)
	1% - 25% (8.44 ACRES)
	26% - 50% (1.71 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020	
DATA SOURCES: TRC, GPS DATA, 6/17/2024	



PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME</b> <b>LONG SOUGHT FOR POND</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 13</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD83 2011 MASSACHUSETTS MAINLAND FTUS; MAP ROTATION: 0  
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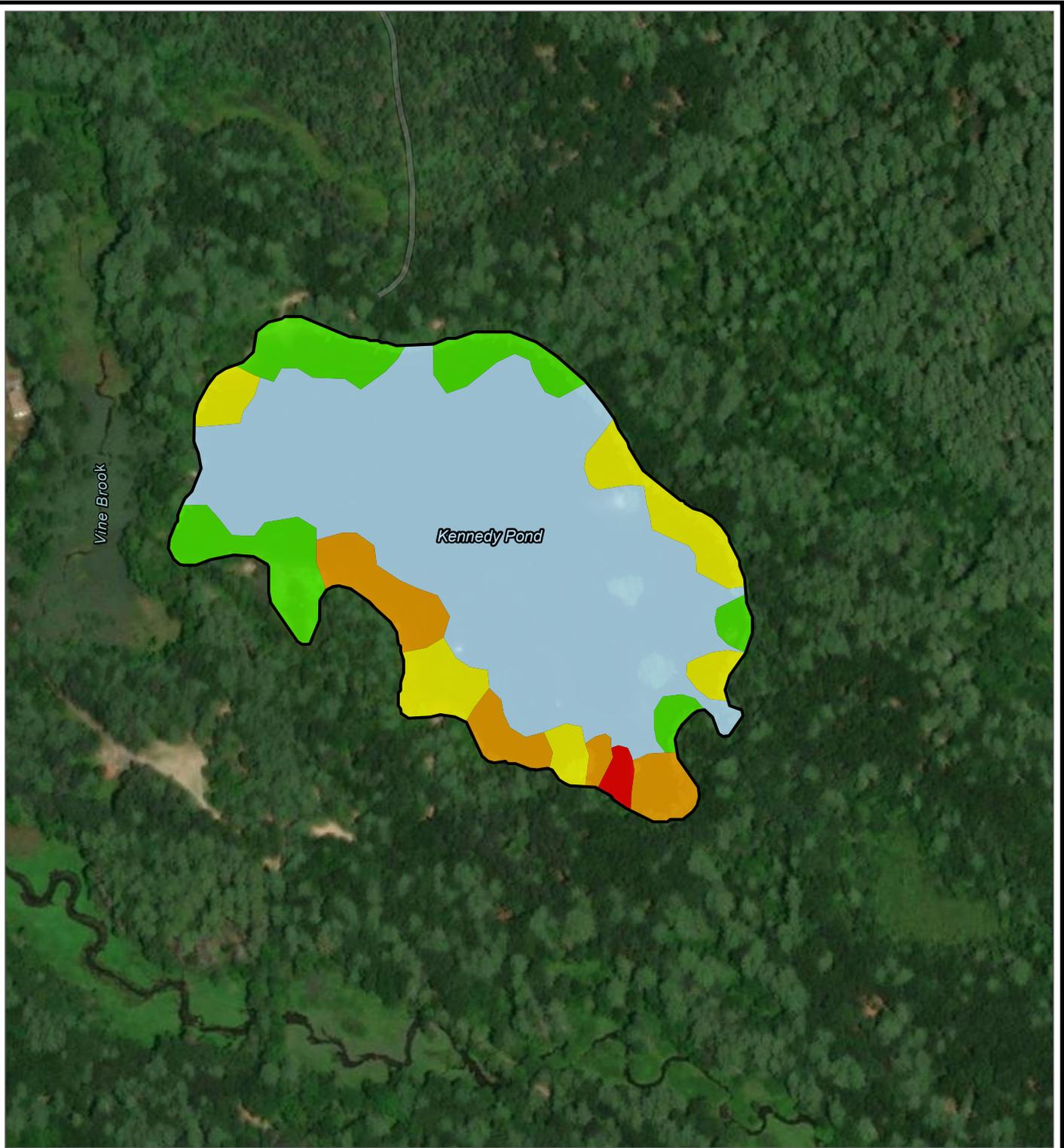


	SHORELINE
	TOWN BOUNDARY
<b>CURLY LEAF PONDWEED COVER</b>	
	0% (99.4 ACRES)
	1% - 25% (9.05 ACRES)
	26% - 50% (1.10 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY WEB SERVICE, 2020	
DATA SOURCES: TRC, GPS DATA, 6/17/2024	

0 250 500  
 FEET  
 1:6,000 1" = 500'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>CURLY LEAF PONDWEED LONG SOUGHT FOR POND</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 680215
CHECKED BY: A. OCHS	<b>FIGURE 14</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	680215_WESTFORDPONDS_2024-SURVEYS_FIGS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM, FILE PATH: T:\PROJECT\SSOL\TUD\ELAKEMANAGEMENT\608215 WESTFORD PONDS PLANTMAPS\APRX: LAYOUT NAME: 608215 WESTFORD PONDS PLANTCOVER



**SHORELINE**  
 SHORELINE

**TOWN BOUNDARY**  
 TOWN BOUNDARY

**PLANT COVER**

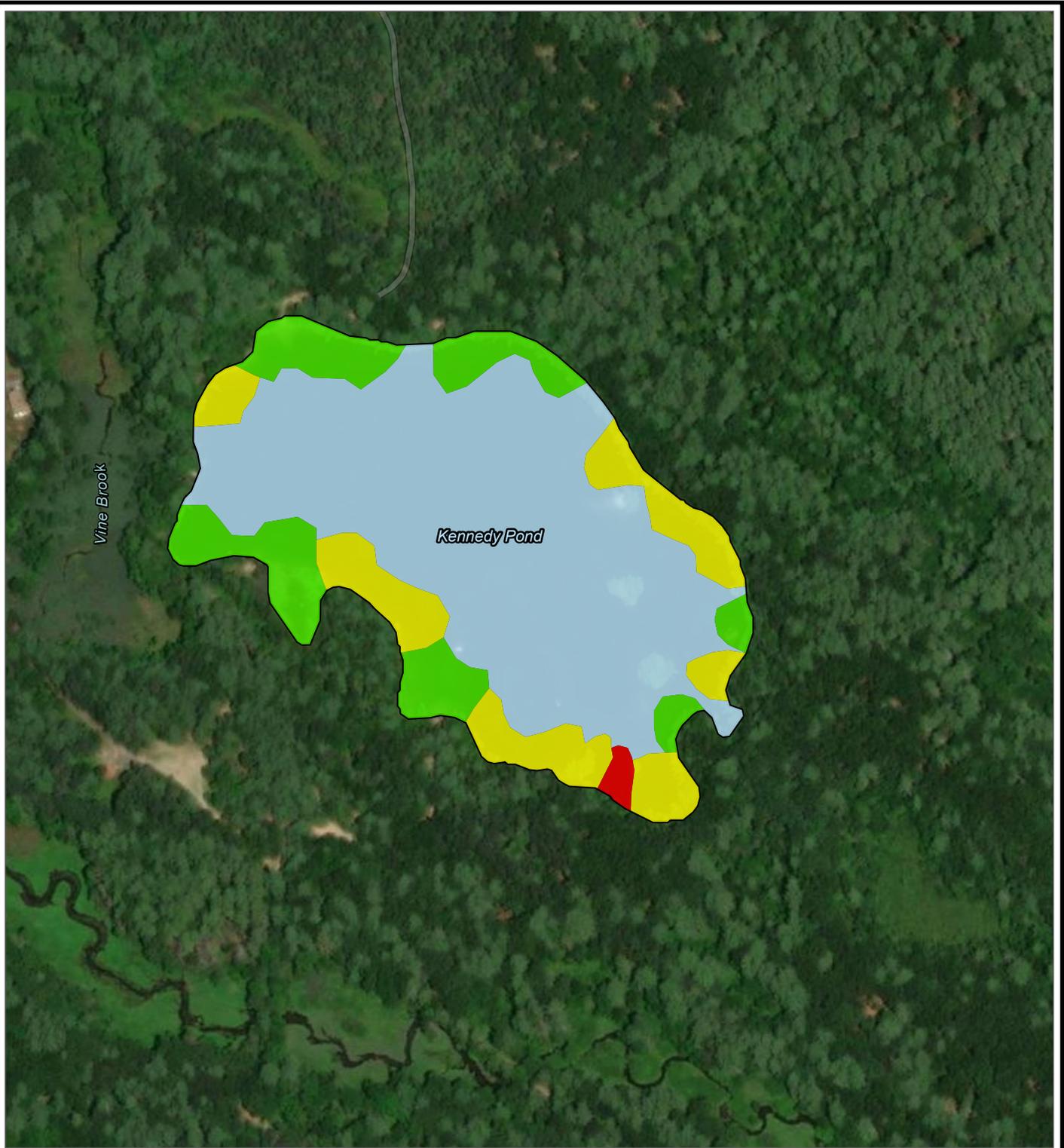
	0% (11.38 ACRES)
	1% - 25% (2.47 ACRES)
	26% - 50% (1.90 ACRES)
	51% - 75% (1.53 ACRES)
	76% - 100% (0.14 ACRES)

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

0 300  
 FEET  
 1:3,600 1" = 300'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER KENNEDY POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 15</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
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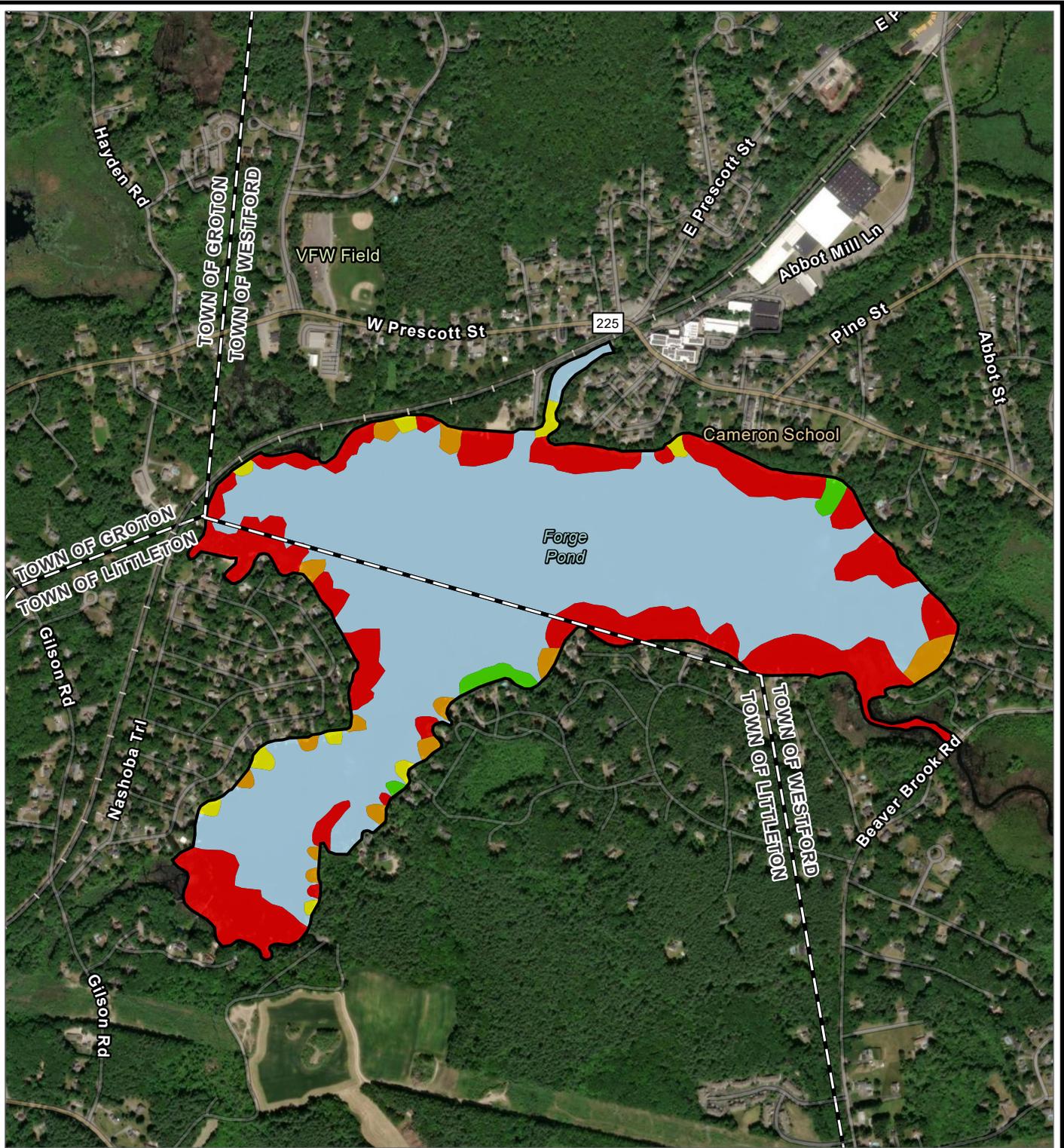


	SHORELINE
	TOWN BOUNDARY
<b>PLANT BIOVOLUME</b>	
	0% (11.38 ACRES)
	1% - 25% (2.98 ACRES)
	26% - 50% (2.91 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0.14 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

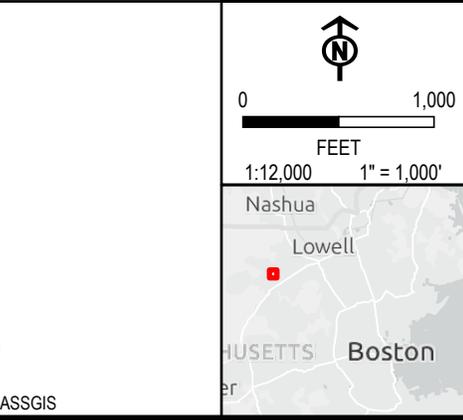
0 300  
 FEET  
 1:3,600 1" = 300'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME KENNEDY POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 16</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD PONDS APPX. LAYOUT NAME: 608215 WESTFORD PONDS PLANTCOVER

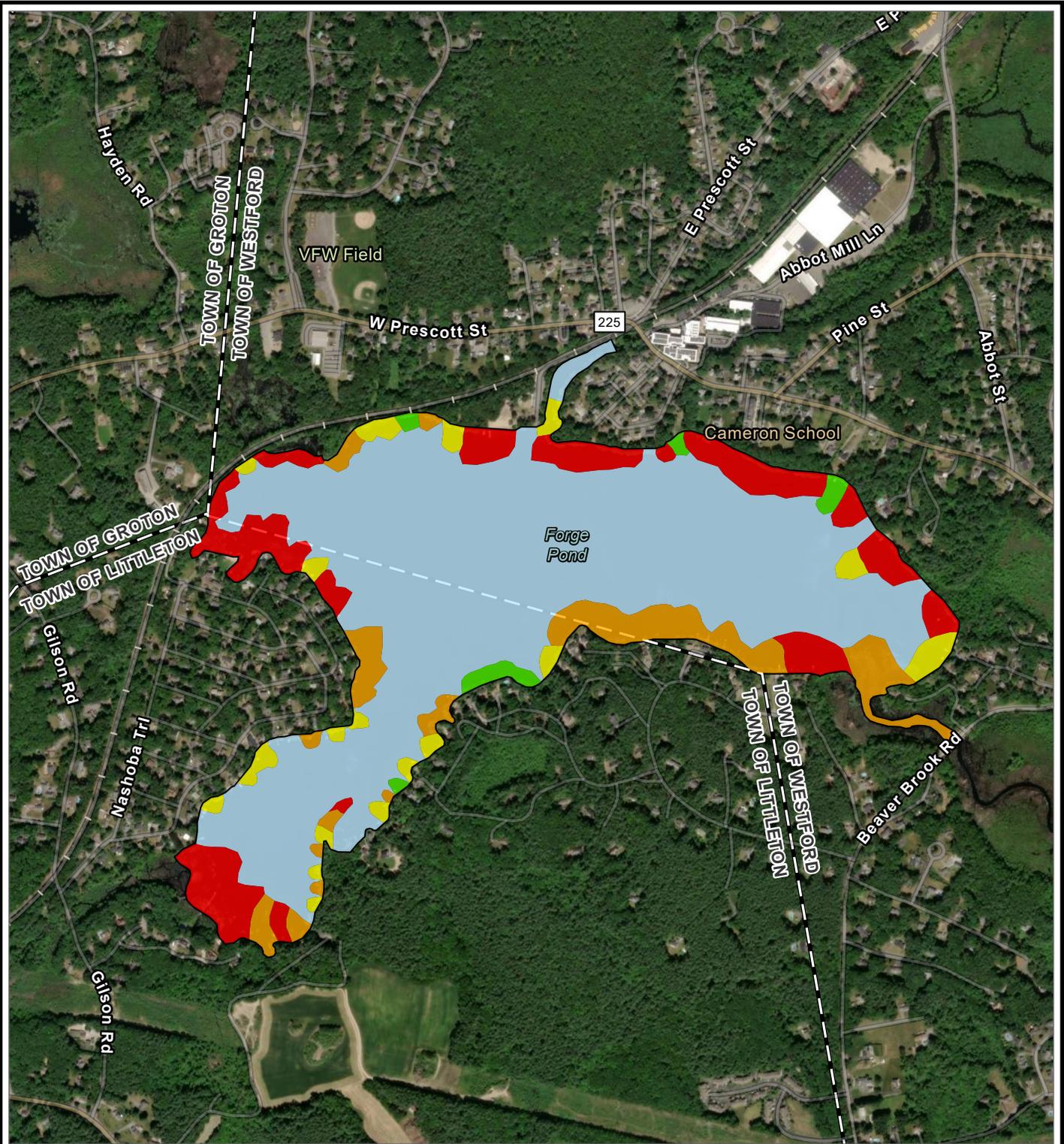


	SHORELINE
	TOWN BOUNDARY
<b>PLANT COVER</b>	
	0% (141.27 ACRES)
	1% - 25% (2.40 ACRES)
	26% - 50% (3.03 ACRES)
	51% - 75% (5.82 ACRES)
	76% - 100% (48.63 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

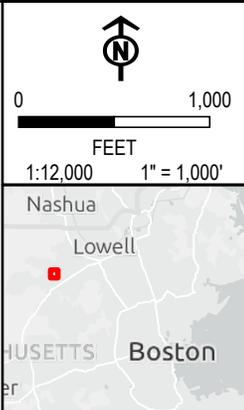


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER FORGE POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 17</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD PONDS APPX. LAYOUT NAME: 608215 WESTFORD PONDS BIOVOLUME

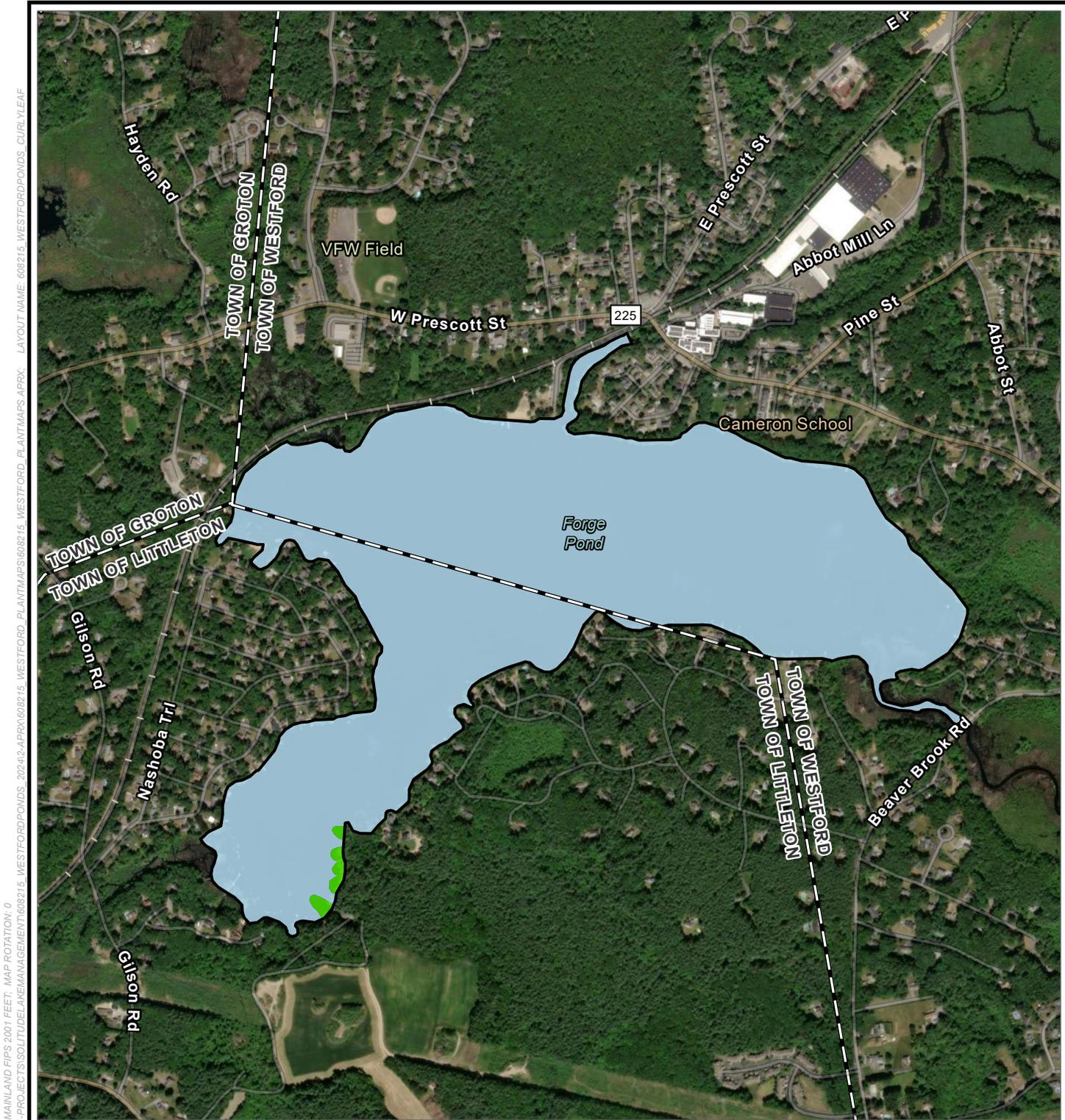


-  SHORELINE
-  TOWN BOUNDARY
- PLANT BIOVOLUME**
-  0% (140.92 ACRES)
-  1% - 25% (3.08 ACRES)
-  26% - 50% (8.91 ACRES)
-  51% - 75% (18.44 ACRES)
-  76% - 100% (29.80 ACRES)

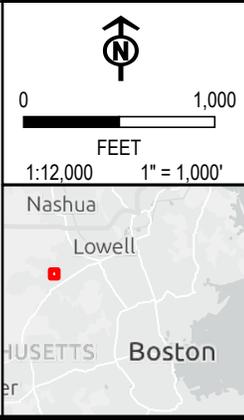


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME</b> <b>FORGE POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 18</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS



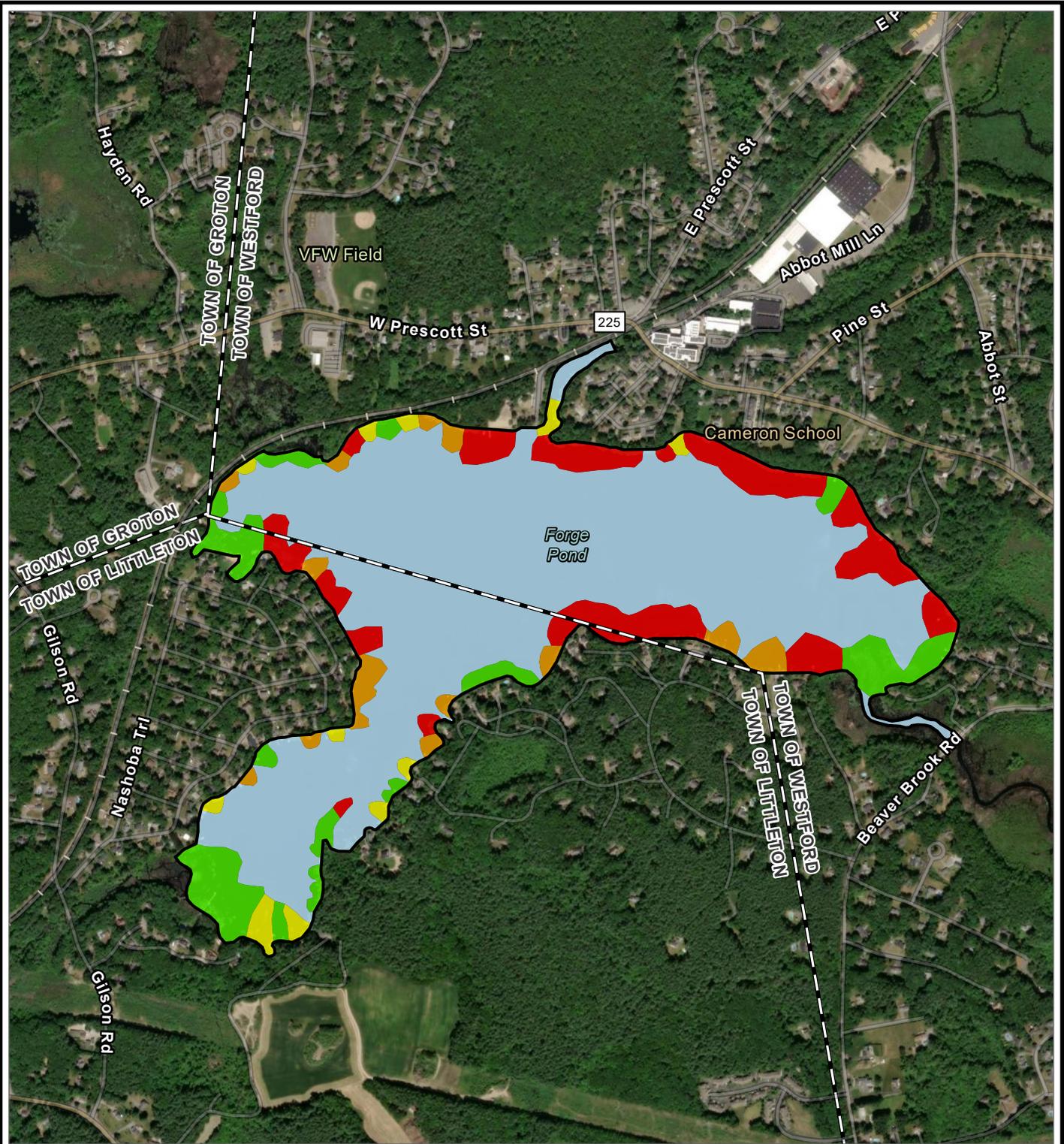
	SHORELINE
	TOWN BOUNDARY
<b>CURLY LEAF PONDWEED COVER</b>	
	0% (200.05 ACRES)
	1% - 25% (1.10 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	



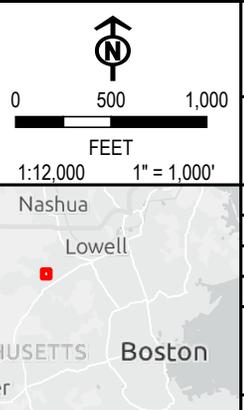
PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>CURLY LEAF PONDWEED</b> <b>FORGE POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 19</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 12:12:04 PM. FILE PATH: T:\1-PROJECTS\SOLUTIONS\DELAKEMANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD\_PONDSDRAWING\608215 WESTFORD\_PONDSDRAWING.DWG

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 11:17:58 AM: FILE PATH: T:\1-PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\APRX: LAYOUT NAME: 608215 WESTFORDPONDS EURASIANMILFOIL



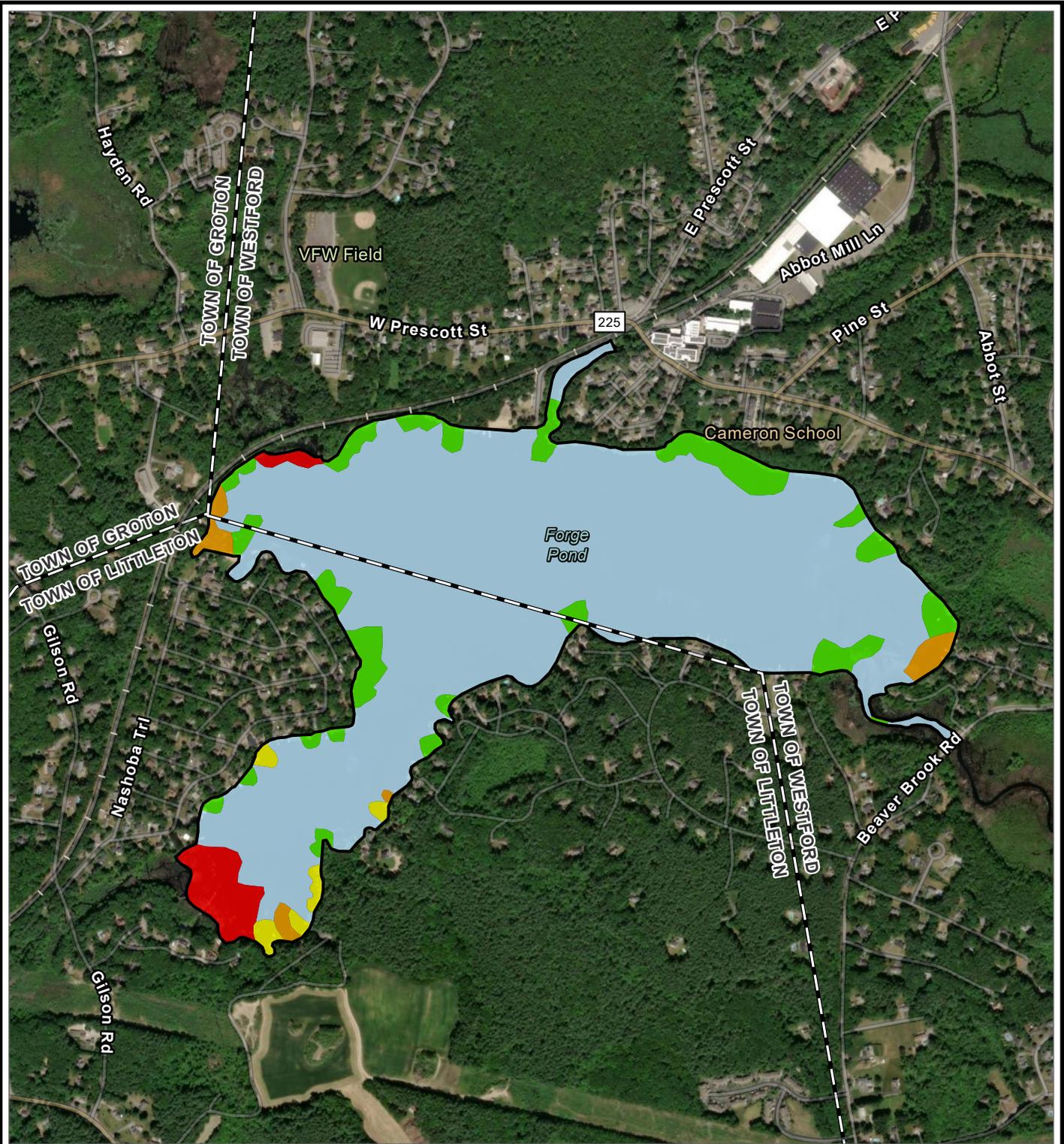
	SHORELINE
	TOWN BOUNDARY
<b>EURASIAN MILFOIL COVER</b>	
	0% (142.42 ACRES)
	1% - 25% (19.36 ACRES)
	26% - 50% (4.92 ACRES)
	51% - 75% (7.65 ACRES)
	76% - 100% (26.80 ACRES)



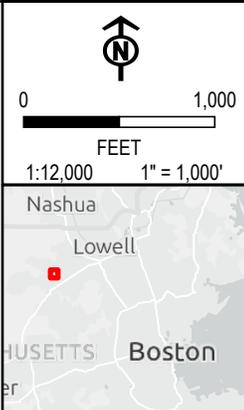
PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>EURASIAN MILFOIL FORGE POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 20</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 11:17:58 AM: FILE PATH: T:\1-PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PONDS\_2024\2-APRX\608215 WESTFORD\_PLANTMAPS.APRX: LAYOUT NAME: 608215 WESTFORDPONDS\_FANWORT



	SHORELINE
	TOWN BOUNDARY
<b>FANWORT COVER</b>	
	0% (168.80 ACRES)
	1% - 25% (19.49 ACRES)
	26% - 50% (2.53 ACRES)
	51% - 75% (3.74 ACRES)
	76% - 100% (6.59 ACRES)

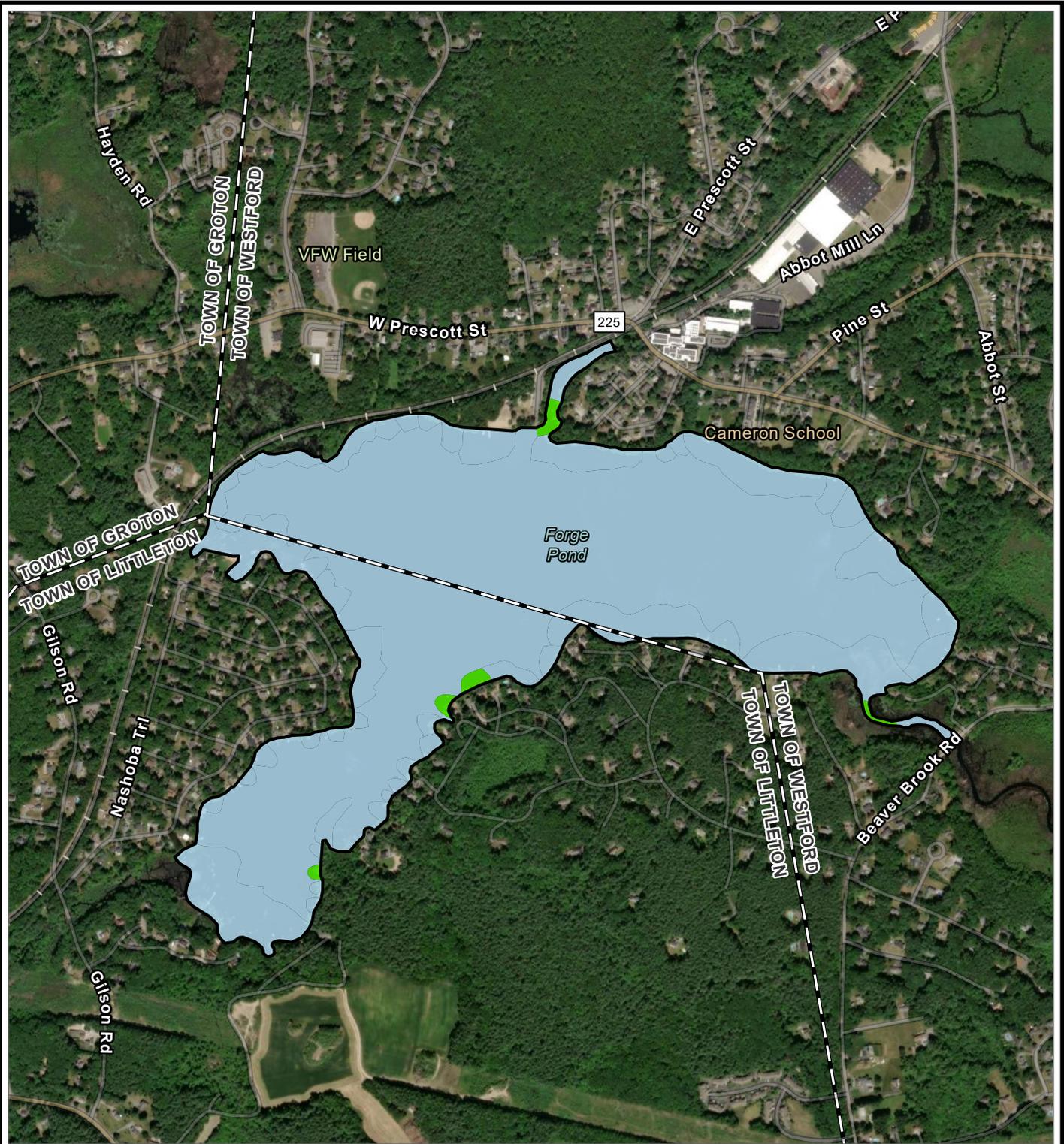


PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>FANWORT FORGE POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 21</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

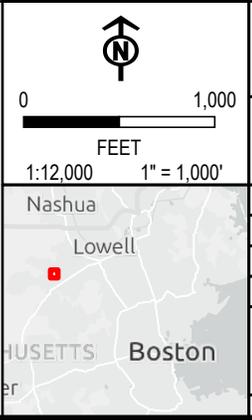
BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS



COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 11:17:58 AM: FILE PATH: T:\1-PROJECTS\SOLUTION\DELAKE\MANAGEMENT\608215 WESTFORD PONDS\_2024\2-APPX\608215 WESTFORD\_PLANTMAPS.APPX: LAYOUT NAME: 608215 WESTFORDPOND.BRITTLENAIAD



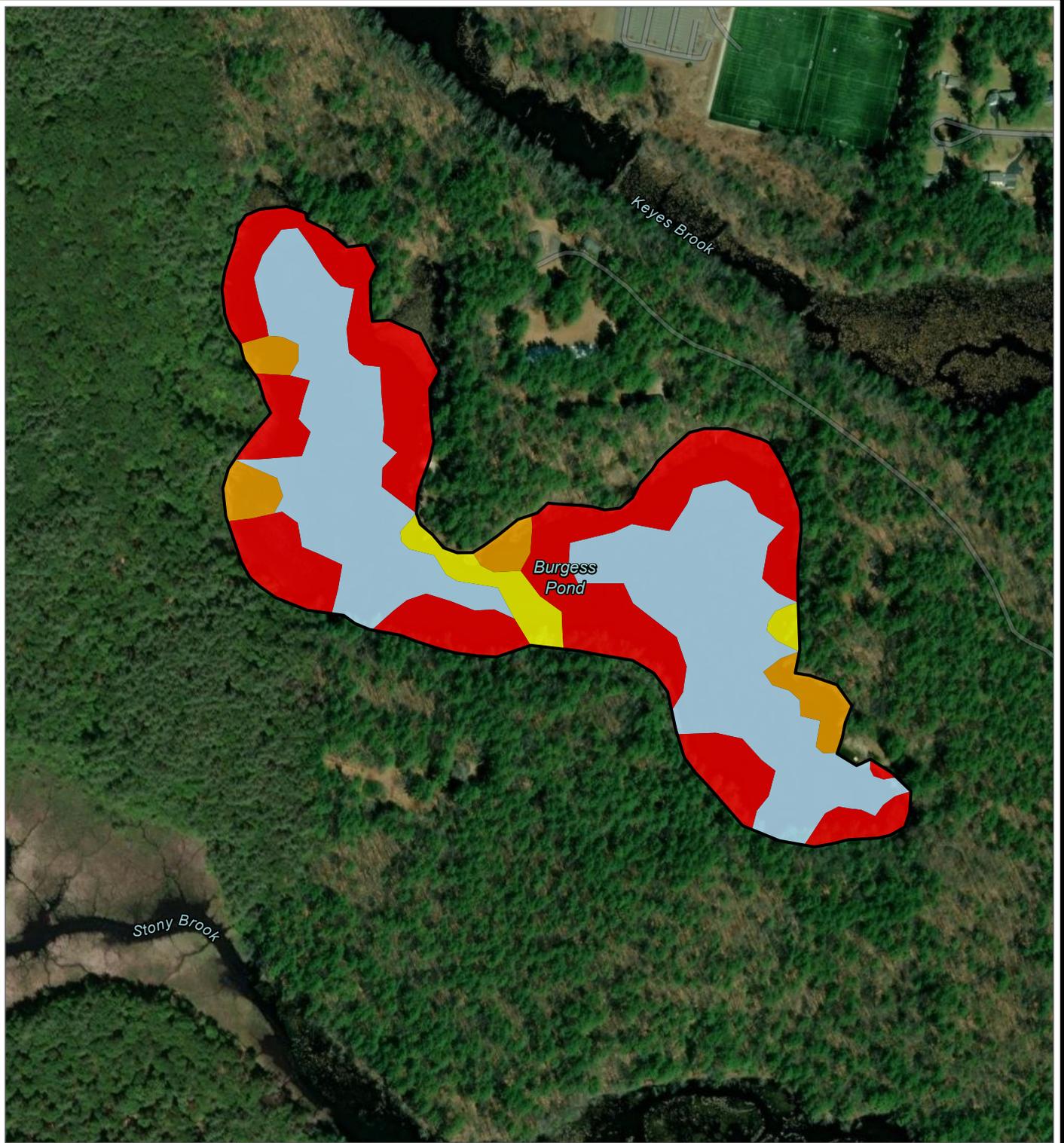
	TOWN BOUNDARY
	SHORELINE
<b>BRITTLE NAIAD COVER</b>	
	0% (199.3 ACRES)
	1% - 25% (1.87 ACRES)
	26% - 50% (0 ACRES)
	51% - 75% (0 ACRES)
	76% - 100% (0 ACRES)



PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>BRITTLE NAIAD FORGE POND</b>	
DRAWN BY: K. BACHAND	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 23</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM. FILE PATH: T:\PROJECT\SSOL\TUD\ELAKEMANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD PLANTMAPS.APRX. LAYOUT NAME: 608215 WESTFORPONDS PLANTCOVER



**SHORELINE**  
 SHORELINE

**TOWN BOUNDARY**  
 TOWN BOUNDARY

**PLANT COVER**

	0% (13.55 ACRES)
	1% - 25% (0 ACRES)
	26% - 50% (1.13 ACRES)
	51% - 75% (1.80 ACRES)
	76% - 100% (12.11 ACRES)

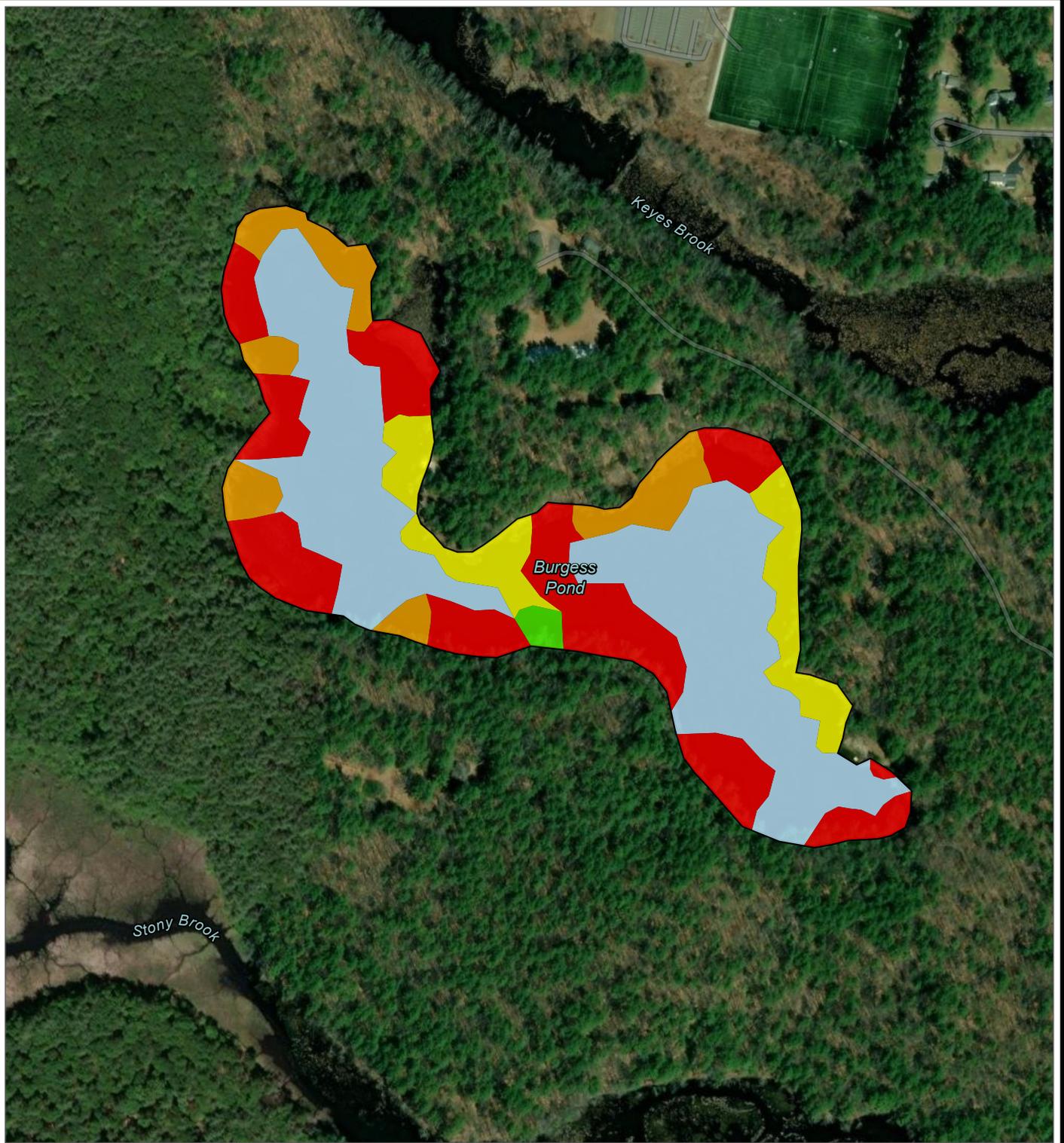
BASE MAP: ESRI WORLD IMAGERY, 2022  
 DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS

0 400  
 FEET  
 1:4,800 1" = 400'

Nashua  
 Lowell  
 MASSACHUSETTS Boston

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT COVER BURGESS POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 24</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS

COORDINATE SYSTEM: NAD 1983 STATEPLANE MASSACHUSETTS MAINLAND FIPS 2001 FEET, MAP ROTATION: 0  
 -- SAVED BY: KBACHAND ON 8/6/2024, 10:39:40 AM, FILE PATH: T:\PROJECT\SSOL\TJDELAKE\MANAGEMENT\608215 WESTFORD PLANTMAPS\608215 WESTFORD PLANTMAPS.APRX, LAYOUT NAME: 608215 WESTFORPONDS\_BIOVOLUME



	SHORELINE
	TOWN BOUNDARY
<b>PLANT BIOVOLUME</b>	
	0% (13.49 ACRES)
	1% - 25% (0.28 ACRES)
	26% - 50% (3.24 ACRES)
	51% - 75% (3.15 ACRES)
	76% - 100% (8.43 ACRES)
BASE MAP: ESRI WORLD IMAGERY, 2022	
DATA SOURCES: TRC GPS LOCATIONS 2023, MASSGIS	

0 400  
FEET  
1:4,800 1" = 400'

PROJECT: <b>WESTFORD PONDS PLANT MAPPING 2024</b> WESTFORD, MASSACHUSETTS	
TITLE: <b>PLANT BIOVOLUME</b> <b>BURGESS POND</b>	
DRAWN BY: E. YPSILANTIS	PROJ. NO.: 608215
CHECKED BY: S. DEHAINAUT	<b>FIGURE 25</b>
APPROVED BY: J. TREACY	
DATE: AUGUST 2024	
404 WYMAN STREET SUITE 375 WALTHAM, MA 02451 PHONE: 781.419.7696	
FILE:	608215_WESTFORD_PLANTMAPS