WEBSTER LAKE

2004
WATER QUALITY AND AQUATIC VEGETATION ASSESSMENT

November 2004

Prepared For:

Webster Lake Association
Celebrating Lake Chargoggagoggmanchauggauggagoggchaubunagungamaugg

Prepared By:

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1.0 INTRODUCTION

GeoSyntec Consultants (GeoSyntec) was contracted by the Webster Lake Association (WLA) to conduct water quality sampling and a visual assessment of nuisance aquatic vegetation in Webster Lake during a survey conducted on September 3, 2004. The purpose of this assessment was to:

1. Collect updated baseline water quality data from in-lake and tributary sampling locations and provide an analysis of the data with regard to lake trophic status and overall water quality.
2. Provide a general assessment of the Webster Lake macrophyte community and a specific assessment of twelve key areas previously identified as having noteworthy infestations of non-native aquatic plant species. This assessment was also intended to survey conditions following vegetation control efforts conducted during the summer of 2004 and provide specific recommendations for vegetation control in 2005.

Webster Lake (Webster, MA)

2.0 WATER QUALITY ASSESSMENT

2.1 Methodology

On September 3, 2004, GeoSyntec conducted water quality monitoring at Webster Lake to provide updated information on overall lake and tributary conditions. Water quality data was collected with an In-Situ Troll 9000 multi-parameter sampler. Grab samples were taken to Alpha Analytical Laboratory (Westborough, MA) for nutrient (total phosphorus and ammonia-nitrogen) and chlorophyll-a analysis. Sampling was conducted at the "deep-hole" of each of the Lake's three major basins (see Figure 2). The Lake's two primary surface water tributaries (Sucker Brook and Brown Brook) were also sampled at their confluence with Webster Lake.

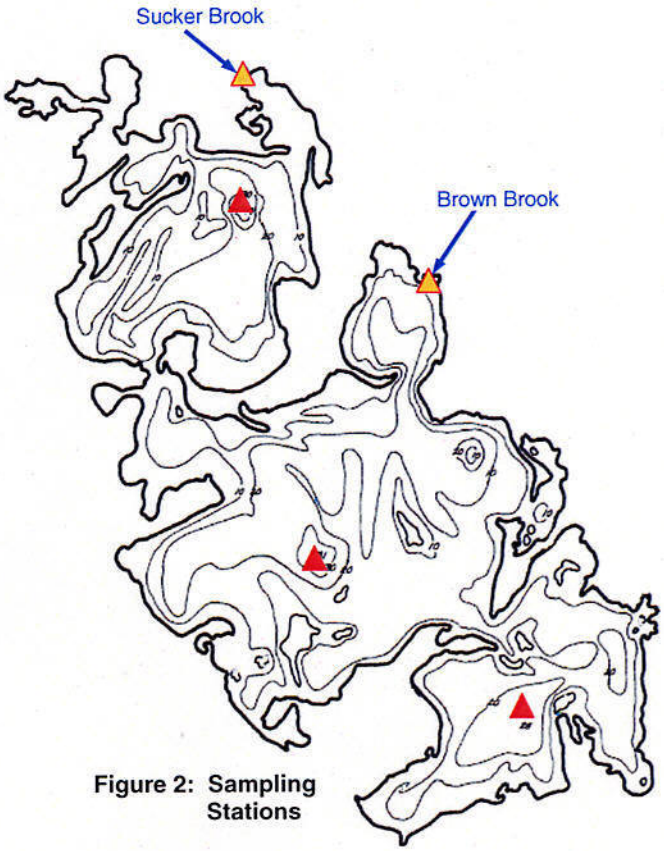


Figure 2: Sampling Stations

The In-Situ Troll 9000 unit was used to establish a water quality profile for three deep-hole sampling locations, with measurements recorded for each parameter at 0.5 meter intervals. Samples for nutrient analysis were taken with a Kemmerer sampler at the surface, bottom and thermocline at the three deep-hole stations. The following 8 parameters were measured:

- pH
- Temperature
- Dissolved oxygen
- Specific conductance
- Total phosphorus (lab analysis)
- Ammonia nitrogen (lab analysis)
- Chlorophyll-a (lab analysis)
- Water clarity (Secchi disk)

The results of the monitoring program are presented in Table 2 on the following page and discussed in Section 2.2

Table 2: Webster Lake Water Quality Sampling Results, 9/3/04

Station	Depth (m)	Temp. (F)	Dissolved Oxygen (mg/l)	pH	Specific Conductance (µmhos/cm)	Total Phosphorus (mg/l)	Ammonia Nitrogen (mg/l)	Chlorophyll-*a* (mg/m3)	Secchi Disk (meters)
Sucker Brook	0.0	77.6	4.8	6.3	259	0.02	<.075		
Brown Brook	0.0	65.0	3.5	7.0	152	0.01	<.075		
North Pond Deep Hole	0.0	77.5	8.2	6.7	176	<.01	<.075	4.97	5.0
	0.5	77.5	8.2	6.7	176				
	1.0	77.4	8.2	6.7	176				
	1.5	77.4	8.2	6.7	175				
	2.0	77.4	8.2	6.7	175				
	2.5	77.4	8.2	6.7	175				
	3.0	77.4	8.2	6.7	174				
	3.5	77.4	8.1	6.7	174				
	4.0	77.3	8.1	6.7	172				
	4.5	77.0	8.0	6.6	171	<.01	<.075		
	5.0	76.7	8.1	6.6	172				
	5.5	76.7	8.1	6.6	172				
	6.0	76.4	4.7	6.4	171				
	6.5	74.8	3.1	6.1	163.8				
	7.0	72.8	2.1	6.0	158.9				
	7.5	71.4	1.7	6.1	155.1				
	8.0	68.9	1.9	6.2	152.7				
	8.5	66.0	2.3	6.3	148.2				
	9.0	63.5	3.0	6.5	143.1	.11	<.075		

Table 2 (continued): Webster Lake Water Quality Sampling Results, 9/3/04

Station	Depth (feet)	Temp. (F)	Dissolved Oxygen (mg/l)	pH	Specific Conductance (µmhos/cm)	Total Phosphorus (mg/l)	Ammonia Nitrogen (mg/l)	Chlorophyll-*a* (mg/m3)	Secchi Disk (meters)
Middle Pond Deep Hole	0	77.6	7.5	6.9	179	.03	<.075	2.08	5.2
	2	77.6	7.5	6.9	178				
	4	77.6	7.5	6.9	177				
	6	77.6	7.5	6.9	177				
	8	77.5	7.4	6.9	177				
	10	77.4	7.3	6.9	177	<.01	<.075		
	12	77.3	7.2	6.9	176				
	14	77.1	6.7	6.8	176				
	16	76.1	6.1	6.7	174				
	18	75.8	5.9	6.6	172				
	20	75.0	1.0	6.8	225	.01	<.075		
South Pond Deep Hole	0	77.7	7.5	6.9	180	<.01	<.075	4.3	4.4
	2	77.7	7.5	6.9	180				
	4	77.6	7.4	6.9	180				
	6	77.6	7.2	6.9	180				
	8	77.6	7.1	6.9	178	<.01	<.075		
	10	77.6	6.9	6.9	177				
	12	77.5	6.5	6.8	177				
	14	77.4	4.7	6.7	176				
	16	75.2	3.0	6.5	173				
	18	74.9	2.7	6.4	172				
	20	73.4	0.9	6.4	170				
	22	70.9	1.0	6.5	177				
	24	66.5	1.6	7.1	221	0.09	0.25		

2.2 Analysis of Water Quality Monitoring Results

Given the limited nature of the sampling program conducted under the project scope of work, there are limits to the conclusions that can be derived from the results. However, this data does provide a useful "snapshot" of conditions in early September 2004 and provides a point of comparison for assessing long-term water quality trends. A summary analysis of the results of the September 3, 2004 water quality monitoring is as follows:

Total phosphorus (TP) is a measure of all of the organic and inorganic phosphorus forms present in the water. In freshwater lakes, phosphorus is usually the most important nutrient determining the growth of algae and aquatic plants. Because phosphorus is typically relatively less abundant than nitrogen, it is considered the "limiting nutrient" for biological productivity. In-lake TP concentrations greater than 0.025 mg/l are considered an indicator of eutrophic (nutrient-rich) conditions.

TP measurements from Sucker Brook, Webster Lake's largest tributary, were moderate on the sampling date. TP measured just upstream of Sucker Brook's confluence with Webster Lake was 0.02 mg/l, just below the eutrophication benchmark of 0.025 mg/l. TP measured at the confluence of Brown Brook was below the laboratory detection limit of 0.01 mg/l. Both the flow rate and quantity from Brown Brook were very low on the sampling date.

In-lake TP concentrations were generally low and, with the exception of the surface measurement from Middle Pond, were consistent with monitoring results from July 2003. North Pond and South Pond had nearly identical profiles for total phosphorus, with both surface and "middle" samples below the laboratory detection limit and higher bottom measurements of .11 mg/l and .09 mg/l respectively. Higher lake bottom TP measurements are normal in deep lakes during the summer and are indicative of nutrient release from sediments due to hypolimnetic oxygen depletion (see discussion of dissolved oxygen results below). Middle Pond had low TP measurements from the middle and bottom sample results, and a surface measurement of .03 mg/l, just above the eutrophication benchmark of 0.025 mg/L.

Ammonia-Nitrogen is a form of nitrogen that is readily assimilated by macrophytes, algae and bacteria. After phosphorus, nitrogen is usually the second most important nutrient for algae and plant growth in lakes. Elevated concentrations in surface waters can be an indicator of pollution from wastewater sources. At high in-lake phosphorus concentrations, nitrogen may become the limiting nutrient to plant growth. Also, nuisance blue-green algal blooms are associated with lakes that have low nitrogen to phosphorus ratios.

Ammonia nitrogen levels measured on the sampling date were uniformly very low. With the exception of the bottom sample from the South Pond deep hole, all of the tributary and in-lake measurements were below the laboratory detection limit of 0.075 mg/l.

Chlorophyll-*a* measurements provide an estimate of algal biomass in the lake. Chlorophyll-a is the green pigment used by plants (including microscopic phytoplankton) to convert sunlight into the chemical energy needed to convert carbon dioxide into carbohydrates.

The in-lake chlorophyll-a results indicated moderately low algal biomass at the surface of the three deep hole locations. Chlorophyll-a measurements were 4.97 mg/m^3 at the North Pond, 2.08 mg/m^3 at the Middle Pond, and 4.3 mg/m^3 at the South Pond. Consistent with the July 2003

monitoring, the range of chlorophyll-a results for all three ponds would classify Webster Lake as a mesotrophic lake, indicating moderate biological productivity that should typically not result in nuisance algae blooms.

Temperature/Dissolved Oxygen profiles from the deep hole sampling locations are shown in the graphs on the following page. The Massachusetts surface water quality standard for dissolved oxygen (DO) in warm water lakes is 5.0 mg/l, although concentrations in the hypolimnion (deep waters) of lakes are frequently below this level during summer thermal stratification. Cold water "trout fishery" habitat is defined by having temperatures below 21° Celsius and dissolved oxygen above 5.0 mg/l. Dissolved oxygen levels have an important impact on fish and other aquatic biota within a lake. Low dissolved oxygen concentrations can impair the health and spawning success of fish and other organisms. Anoxic (oxygen depleted) conditions in the hypolimnion are also associated with the release of phosphorus from lake sediments back into the water column, fueling summer algae and plant growth.

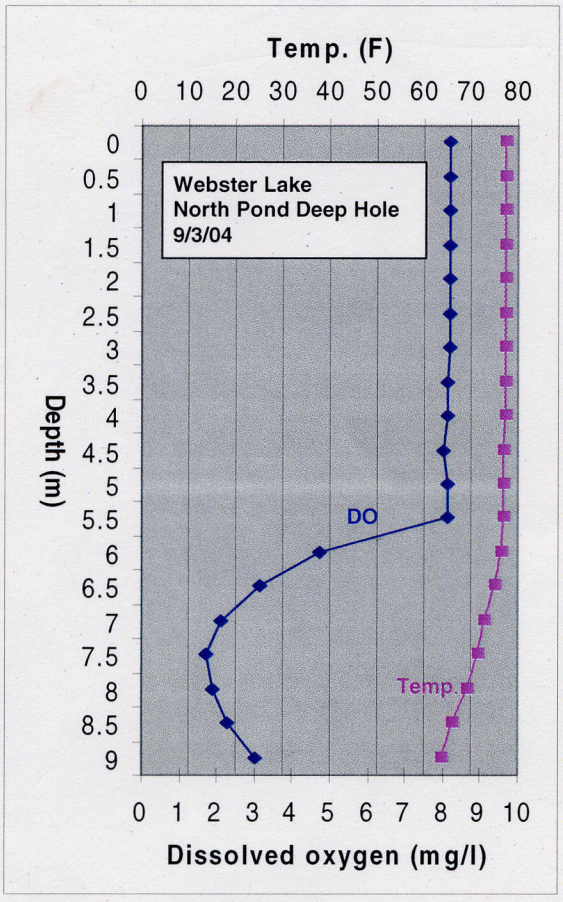
- The **North Pond** deep hole exhibited a dissolved oxygen/temperature profile typical of late summer/early fall. In late summer, the lake's distinct thermal zones begin to dissipate as surface waters begin to cool and sink. The "thermocline", which acts as a barrier to internal mixing due to a gradient in temperature and water density, begins to "erode" and weaken, and continues to do so as the lake cools. Wind energy helps mix the lake deeper and deeper as the fall season progresses. On the September 3, 2004 sampling date, North Pond had a high degree of temperature uniformity and exhibited a weak thermocline beginning around a depth of 6.0 meters (19.7 feet). DO and temperature profiles for the North Pond were recorded from the surface to a depth of 9 meters (30 feet). From the surface to a depth of 5.5 meters (18 feet), DO measurements exceeded the warm water fishery standard of 5.0 mg/l, with no portion of the water column meeting the cold water fishery standards listed above. Oxygen levels were rapidly decreased at depths lower than 5.5 meters (18 feet).

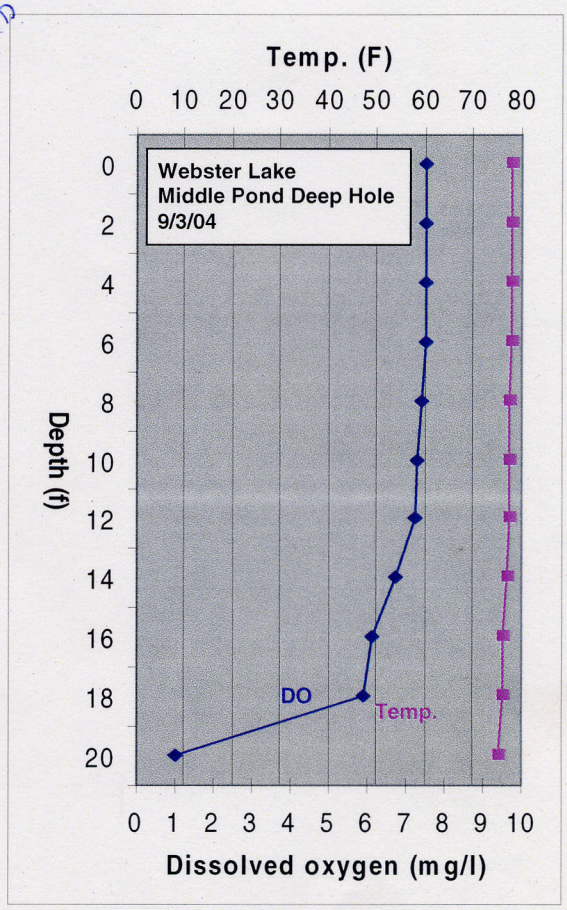
- The **Middle Pond** deep hole was profiled to a bottom depth of 20 feet. The 20-foot temperature/dissolved profile for Middle Pond was nearly identical to the profile for the upper 20 feet of the North Pond, as described above. DO measurements for the top 18 feet of Middle Pond exceeded the standard for warm water fishery habitat.

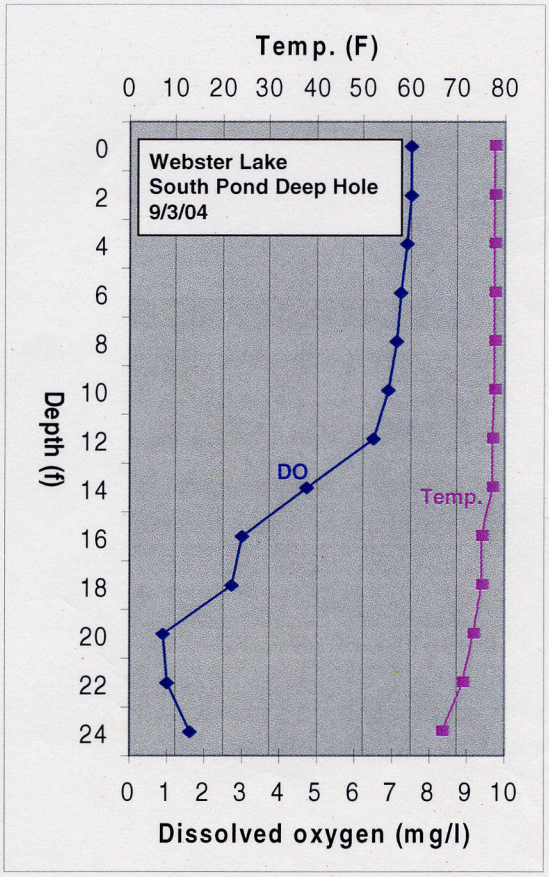
- The **South Pond** deep hole was profiled to a bottom depth of 24 feet. Dissolved oxygen levels ranged between 7.5 mg/l to 6.5 mg/l from the surface to a depth of 12 feet, then declined abruptly in the bottom twelve feet of the deep hole. Warm water fishery standards for DO were exceeded in the top 13 feet of the South Pond.

Temperature/Dissolved Oxygen profile graphs for each of the three deep hole sampling locations are provided on the following page.

ADD PH


Temp. (F)
0 10 20 30 40 50 60 70 80
Webster Lake
North Pond Deep Hole
9/3/04
DO
Temp.
Depth (m)
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9
0 1 2 3 4 5 6 7 8 9 10
Dissolved oxygen (mg/l)


Temp. (F)
0 10 20 30 40 50 60 70 80
Webster Lake
Middle Pond Deep Hole
9/3/04
DO
Temp.
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20
0 1 2 3 4 5 6 7 8 9 10
Dissolved oxygen (mg/l)


Temp. (F)
0 10 20 30 40 50 60 70 80
Webster Lake
South Pond Deep Hole
9/3/04
DO
Temp.
Depth (ft)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 1 2 3 4 5 6 7 8 9 10
Dissolved oxygen (mg/l)

pH is a measurement of acidity based on the presence of hydrogen ions. A pH of 7.0 is neutral, while values below 7.0 indicate acidic waters and values above 7.0 indicate basic waters. The pH level of a lake affects nutrient and sediment interactions and the composition and distribution of the fish population. Most fish cannot tolerate a pH below 4 or above 11, and their growth and health is affected by long-term exposure to waters with a pH less than 6.0 and greater that 9.5.

As in 2003, the pH ranges recorded at Webster Lake's three deep-hole locations were within the normal range for Massachusetts surface waters. pH measurements at the deep holes ranged from 6.0 to 7.1. Both Middle Pond and South Pond had exhibited a highly uniform pH profile, which is consistent with the uniform temperature gradient described above fore these ponds. The deeper North Pond exhibited a pH profile that reflects the sharp drop in dissolved oxygen levels below a depth of 5.5 meters. The lower pH values found below this depth can generally be attributed to respiration and decomposition processes. Organic matter that settles onto the lake bottom and decomposes contributes to differences in pH readings with depth in the lake.

Specific conductance measures the ability of water to conduct electricity by measuring the presence of ions in solution. Chloride is typically the predominant ion found in surface waters, including man-made sources of chloride ions such as wastewater and road salt. The primary natural sources of chloride ions in surface waters include the weathering of soils and rocks, and wet and dry precipitation. Regional variations in watershed geology can result in a wide range of "normal" conductance levels from lake to lake. However, abnormally high conductance levels can be an indicator of pollutants sources such as road salting, wastewater discharges, and runoff from developed areas.

As in 2003, specific conductance levels were generally consistent at each of the Webster Lake deep hole sampling stations. North Pond ranged from 143 to 176 µmhos/cm. Middle Pond generally ranged from 172 to 179 µmhos/cm, with only a pond bottom measurement outside this range (225 µmhos/cm). Nearly identical to Middle Pond, South Pond ranged from 170 to 180 µmhos/cm, with a pond bottom measurement of 221 µmhos/cm. These measurements indicated no unusual "spikes" at any sampling location and are within the normal range for Massachusetts surface waters. The tributary measurement from Brown Brook, 152 µmhos/cm, was moderate and similar to the 2003 result of 156 µmhos/cm. Sucker Brook's measurement of 259 µmhos/cm was considerably higher than 2003 (156 µmhos/cm).

The **secchi disk** is a weighted black and white disk that is lowered into the water by a calibrated chain until it is no longer visible. This method provides a measure of water clarity (light penetration) within the water column, which is primarily a function of algal productivity, water color, and turbidity caused by suspended particulate matter. Water clarity impacts the growth of rooted aquatic plants by determining the depth to which sunlight can penetrate to the lake sediments. Secchi disk measurements below 6 feet generally indicate eutrophic conditions, and state regulations require that public swimming beaches have a minimum secchi disk clarity of 4 feet.

Secchi disk clarity at Webster Lake was relatively good for a Massachusetts lake at each of the deep-hole locations on the sampling date, and was slightly higher than recorded in July 2003 for each of the deep hole locations. Secchi disk clarity was 5.0 meters (16.4 feet) at North Pond, 5.2 meters (17 feet) at Middle Pond, and 4.4 meters (14.4 feet) at the South Pond deep hole.

3.0 AQUATIC VEGETATION ASSESSMENT

Twelve areas in Webster Lake were identified as priority areas for GeoSyntec's 2004 aquatic vegetation assessment, based on the nine areas previously assessed by GeoSyntec in 2003 and three new areas specified by the Webster Lake Association. These twelve areas are discussed below, identified according to the numbering scheme used in the attached Figure 1. *(Note: Sites 1-9 are the same as those assessed by GeoSyntec in 2003).*

The recommendations discussed below are based primarily on the results of the aquatic vegetation survey conducted during September 3, 2004, as well as discussions with members of the Webster Lake Association and Gerry Smith of Aquatic Control Technology, Inc. (ACT). ACT treated areas 2-10 in June 2004 with the aquatic herbicide Reward (Diquat), and also conducted mechanical harvesting in Area 1. The recommendations provided below represent our best professional judgment based on September 2004 conditions and with specific attention to changes observed since the July 2003 survey.

The 2004 Reward treatments provided a high degree of temporary control over invasive milfoil species, as anticipated. Unfortunately, the **invasive Fanwort, which is not controlled by Reward, experienced a significant increase in dominance in several of the treated areas and has also spread to several areas where it was not found in 2003. Based on this combination of results, GeoSyntec recommends that the WLA should proceed very cautiously with future Reward treatments.** Given the relatively short-term effectiveness of contact herbicides such as Reward, re-growth of milfoil species can be expected in the treated areas during 2005. However, based on the results of the September 2004 survey, **GeoSyntec does not recommend *at this time* that a follow-up Reward treatment be conducted for any of the sites treated in 2004.** Future spot treatments to control milfoil (or other species) should be conducted on an as-needed basis, and with careful consideration of the status of Fanwort within and around the area to be treated. Follow-up monitoring of all locations is highly recommended for the summer of 2005, and should be conducted in advance of any planned herbicide applications.

As of the 2004 survey, control of Fanwort with the systemic herbicide Sonar is recommended in three cove areas where (1) the recent spread of Fanwort is substantial and (2) spot treatment is feasible because the relatively narrow mouth of each cove allow a curtain barrier to be used to prevent dilution (see discussion under Site 5 and site 6 below).

Plant Control Recommendations - Summary Table

Location	Area (approximate)	Recommended Action	Estimated Cost
Site 1	2.5 acres	Mechanical Harvesting*	$2,000
Site 2	2.6 acres	Monitor re-growth of milfoil and spread of Fanwort.**	
Site 3	2 acres	Monitor re-growth of milfoil and spread of Fanwort.**	
Site 4	10 acres	Herbicide (Sonar)*	$8,000
Site 5	5 acres	Herbicide (Sonar)*	$4,000
Site 6	6 acres	Monitor re-growth of milfoil and spread of Fanwort.**	
Site 7	4 acres	Herbicide (Sonar)*	$3,500
Site 8	3.5 acres	Monitor re-growth of milfoil**	
Site 9	1.4 acres	Monitor re-growth of milfoil and spread of Fanwort.**	
Site 10	5 acres	Monitor re-growth of milfoil and spread of Fanwort.**	
Site 11	20 acres	No actions recommended.	
Site 12	3 acres	Continue ongoing nuisance plant control in this marina area on an as-needed basis.**	

*** Priority plant control recommendations for summer 2005**

**** Spot treat for invasive milfoil species with Reward (Diquat) *only* on an as-needed basis.**

SITE 1: As reported in July 2003, the shallow cove at the northeast corner of Lake Webster (known as Sucker Cove) is very densely vegetated, making boat access difficult. On the survey date, this area was dominated by floating-leaved plants including Yellow Water Lily, White Water Lily and Water Shield. As in 2003, invasive Fanwort (*Cabomba caroliniana*) and Variable Milfoil (*Myriophyllum heterophyllum*) are also present in this area in lesser amounts.

As recommended in 2003, GeoSyntec recommends that a mechanical harvester be used to maintain a moderately wide boating channel. Harvesting provides better longevity of control than herbicides for floating leaf plants such as water lilies. Harvesting a 100-foot wide swath to the northern extent of the private properties in the cove would involve a total harvesting area of approximately 2.5 acres at a cost of approximately $2,000. Any additional harvesting can be estimated at approximately $750 per acre.

- **Recommended Technique:** Mechanical Harvesting
- **Approximate Treatment Area:** 2.5 acres
- **Estimated Cost:** $2,000 (for one-time harvest of 2.5-acre boating channel)

SITE 2: Site 2 is located at the northeast corner of Lake Webster, just south of Sucker Cover. On the survey date, the northern third of Site 2 (approximately 250-300 feet along the northeast shoreline) was dominated by a dense stand of invasive Fanwort. The area immediately to the south of the Fanwort stand was dominated by low to moderate growth of a mixed assemblage including Variable milfoil, Ribbonleaf Pondweed, Coontail, and Bladderwort.

- **Recommendation:** On the survey date, Fanwort was the only invasive plant growing densely in this area. Sonar (Fluridone) is the only herbicide effective at treating this plant, but cannot be feasibly used to spot treat this area (see discussion below for Site 4/Site 5). As such, no plant control actions are recommended for Site 2 *at this time*. This area should be closely monitoring during the 2005 growing season for re-establishment of invasive milfoil species and the spread of Fanwort.

SITE 3: Site 3 is located at the northwest corner of Reid Smith Cove. Following the 2004 reward treatment, this area exhibited mostly sparse growth, with an assemblage that included Bushy Pondweed, Big-leaf Pondweed, and Variable Milfoil and Robbin's Pondweed.

- **Recommendation:** No plant control actions are recommended for Site 3 *at this time*. This site should be carefully monitored for the re-emergence of invasive milfoil species and the new establishment of Fanwort.

SITE 4 and Site 5: These two cove areas are located at the southeastern corner Middle Pond (Site 4, 10 acres) and the northeast corner of South Pond (Site 5, 5 acres). The June 2004 herbicide treatment with Reward (Diquat) appears to have provided control of the majority of the aquatic vegetation that was dominant in these coves in 2003. However, invasive Fanwort (which is not controlled by Reward) has now become the dominant plant and was growing densely in both coves during the September 2004 survey. Fanwort was particularly dense throughout the shallow eastern end of both coves. Water lilies were also common around the cove margins.

As stated above, Sonar is the only herbicide that provides effective temporary control of Fanwort. Typically, Sonar treatments require maintaining the herbicide's target concentration for approximately 60 days. Because of the long exposure time that is required, Sonar is usually not an option for "spot" treatments in limited areas of a water body. However, the cove areas of Site 4 and Site 5 could be treated with Sonar if a floating curtain is installed at the narrow mouth of each cove, to minimize dilution over the treatment period. How effectively the cove can be cordoned off from the rest of the lake will determine the need for "booster" applications to maintain the target herbicide concentration. The likely need for booster applications, as well as the labor required to install the floating curtain barriers, are factors that would increase the total cost of treating these areas.

- **Recommended Technique:** Herbicide (SONAR)
- **Approximate Treatment Areas:** Site 4: 10 acres; Site 5: 5 acres
- **Estimated Cost:** Site 4: $8,000, Site 5: $4,000

SITE 6: This 6-acre area along northeastern corner of South Pond was dominated by invasive Variable milfoil in 2003. On the 2004 survey date, Site 6 exhibited moderate plant growth, dominated by native Big-leaf Pondweed (*Potamogeton amplifolius*) and Fern-leaf Pondweed (*Potamogeton robbinsii*). Moderately dense, low-growing Fanwort was dominant in the small cove on the eastern edge of Site 6.

- **Recommendation:** Based on the predominantly native plant assemblage found over most of Site 6, no control actions are recommended at this time. If Sonar treatment for

control of Fanwort is pursued as described above for Sites 4 and 5, the same approach could also be considered for the small cove area on the eastern edge of Site 6.

SITE 7: Site 7 is the cove that is occupied by Action Marina at the southwest corner of Middle Pond. Moderate growth of Fanwort was found throughout this cove. Spot treatment with Sonar is feasible for this cove because the mouth of the cove is relatively narrow and could be blocked with a curtain barrier. Treatment in this cove is recommended because of the high likelihood that boat traffic in and out of the marina could fragment Fanwort plants and promote its spread to other parts of the lake.

- **Recommended Technique:** Herbicide (SONAR)
- **Approximate Treatment Areas:**
- **Estimated Cost:** $3,500

SITE 8: Site 8 is located on the western side of Middle Pond, and was identified in 2003 as one of the only locations in Lake Webster with a significant bed of invasive Eurasian milfoil. Following the Reward treatment in July 2004, the September 2004 survey found this area dominated by moderate growth of a native assemblage, including water lilies, Big-leaf Pondweed and Fern-leaf Pondweed.

- **Recommendation:** No control actions are recommended at this time. This site should be carefully monitored in 2005 for the re-establishment of Eurasian milfoil.

SITE 9: This area is located just southeast of the narrows connecting Middle Pond and North Pond. In 2003, this area exhibited a dense mixed assemblage including Bladderwort, Variable Milfoil, Eurasian milfoil and White Water Lily. In September 2004, this area was dominated by dense growth of White Water Lily, with minor amounts of Variable milfoil and Fanwort also present.

- **Recommendation:** The spread of Fanwort within this area should be watched closely. As stated above, Fanwort was found in small amounts in 2004 (not found at this site in 2003). Since native species currently dominate the area and spot treatment with Sonar is not feasible along this shoreline, no plant control actions are recommended at this time.

SITE 10: This area is located at the extreme southeast corner of South Pond, beginning just south of the Public Access Boat launch ramp. In 2003, this shallow area exhibited very dense plant growth dominated by White water lily and other native species. Small amounts of the invasive Variable milfoil were also present in 2003. Following the 2003 Reward treatment, the northern half of this area is now dominated by dense growth of Fanwort, with Yellow Water Lily dominant in the more shallow southern half. The use of sonar to treat Fanwort in this area does not appear to be feasible and is not recommended.

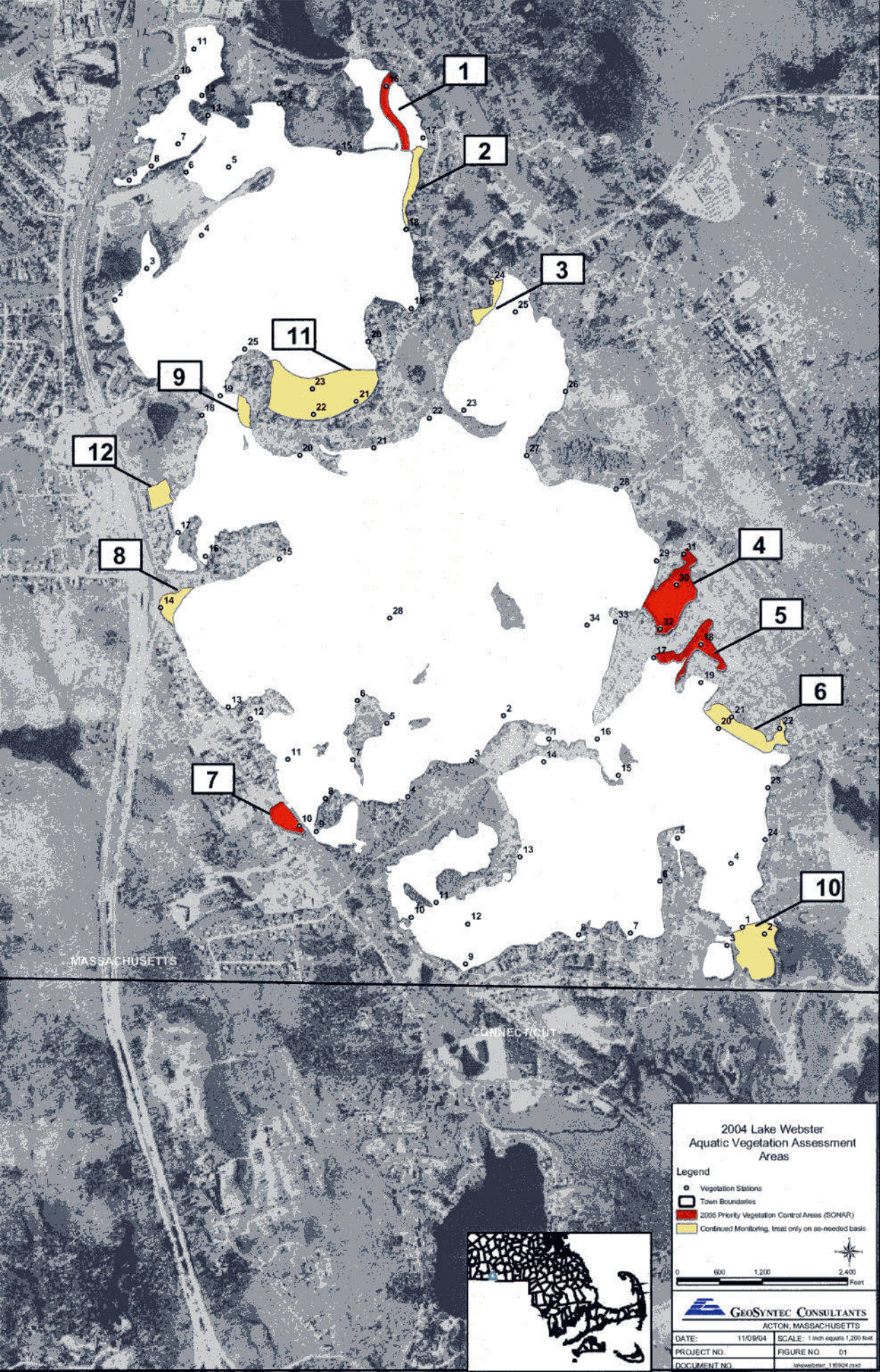
- **Recommendation:** Use of the herbicide Sonar to treat Fanwort in this area does not appear to be feasible and is not recommended.

SITE 11: Site 11 is a broad cove area at the southern tip of the North Pond. This area was characterized by a moderately dense, low-growing assemblage including Bladderwort (Utricularia sp.), Variable milfoil, and a variety of native species. Overall, this area appeared to be in relatively good condition.

- **Recommendation:** No plant management actions necessary at this time.

SITE 12: This small (approximately 3-acre) cove occupied by a marina. It is GeoSyntec's understanding that Lycott Environmental is under contract to conduct regular herbicide treatments of this area. On the survey date, this cove exhibited sparse growth of a mixed assemblage including bladderwort, Variable milfoil, bladderwort, bushy pondweed and several other native species.

- **Recommendation:** Ongoing efforts to keep this area of high boat traffic free from non-native plants should be continued on an as-needed basis.


1
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12
MASSACHUSETTS
CONNECTICUT
2004 Lake Webster
Aquatic Vegetation Assessment
Areas
Legend
Vegetation Stations
Town Boundaries
2005 Priority Vegetation Control Areas (SONAR)
Continued Monitoring, treat only on as-needed basis
0
600
1,200
2,400
Feet
GeoSyntec Consultants
ACTON, MASSACHUSETTS
DATE: 11/09/04
SCALE: 1 inch equals 1,200 feet
PROJECT NO.
FIGURE NO. 01
DOCUMENT NO.
lakewebster_110904.mxd