404 Wyman Street, Suite 375, Waltham, Massachusetts 02451 • 781.419.7696
10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915 • 401.434.5560
780 Lynnhaven Parkway, Suite 400, Virginia Beach, Virginia 23452 • 757.821.3095
environmental consulting & engineering services

July 12, 2021

Tommy Lee
Management Committee Chairman
Cedar Meadow Lake Watershed District
P.O. Box 320
Leicester, MA 01524-0320

Re: Abbreviated Vegetation Survey and Recommendations – 2021
Cedar Meadow Lake
Leicester, Massachusetts
ESS Project No. C609-003

Dear Mr. Lee,

ESS Group, Inc. (ESS) is pleased to present the Cedar Meadow Lake Watershed District (the District) with this report summarizing the abbreviated vegetation survey of Cedar Meadow Lake completed by ESS on June 30th, 2021, and our corresponding management recommendations. This mapping effort was initiated in response to concerns raised by residents about the presence of dense weed beds in areas of the pond.

Plant Mapping

ESS conducted an abbreviated vegetation survey of Cedar Meadow Lake on June 30th, 2021. Due to time constraints, the ESS crew utilized a map of dense weed beds provided by Brian Waterman (Vice-Chairman of the District) to target the survey effort to areas of concern.

Variable Leaf Milfoil

ESS confirmed that the dense weed beds noted by residents are composed almost entirely of invasive variable-leaf milfoil (Figure 1). This species was observed around the periphery of the pond, most commonly forming isolated small but dense patches ("Dense Growth"), though more continuous large patches were present in some areas ("Very Dense Growth"). Results from point samples highlight the patchy distribution of variable leaf milfoil within the lake, with very dense beds surrounded by areas devoid of this species. Overall, variable leaf milfoil was observed growing in dense patches in areas totaling approximately 8.8 acres, and in larger patches covering approximately 2 acres, of Cedar Meadow Lake (note that Figure 1 potentially underestimates coverage due to the abbreviated nature of this survey).

Coverage of this species has significantly increased compared to August 2020, and current variable leaf milfoil extent is greater than before the initial herbicide application at the lake in 2015.

Variable leaf milfoil stems on a plant sampling rake at Cedar Meadow Lake, June 30, 2021.

Fanwort

The invasive weed fanwort was also observed during the abbreviated vegetation survey. Though a few, very small, isolated patches of this species were observed in the vicinity of the eastern and southern shorelines of the lake, fanwort growth was primarily concentrated in the two northern coves (Figure 2). Dense fanwort beds occupied much of these coves, abutting and distributed amongst dense patches of variable leaf milfoil.

Fanwort distribution is similar to conditions observed in August 2020, and coverage remains below levels observed prior to initial treatment of the lake with herbicides in 2015.

Dense variable leaf milfoil (right) and fanwort (left), growth in the northeastern cove of Cedar Meadow Lake, June 30, 2021.

Additional Plant Species

The June 2021 survey targeted the dense weed patches identified by residents (variable leaf milfoil and fanwort), but ESS identified several additional native species of aquatic macrophytes, including Canadian waterweed (*Elodea canadensis*), aquatic moss (*Fontinalis spp.*), stonewort (*Nitella spp.*), yellow water lily (*Nuphar lutea variegata*), thinleaf pondweed (*Potamogeton pusillus*), common bladderwort (*Utricularia macrorhiza*), and purple bladderwort (*Utricularia purpurea*).

ESS did not observe any invasive water chestnut during the survey. This species was first documented in the lake in August of 2020.

Management Recommendations

The Order of Conditions for the Lake allows for the use of the following chemical controls to address invasive variable leaf milfoil and fanwort:

- Clipper (effective against variable leaf milfoil and fanwort)
- Reward (effective against variable leaf milfoil)
- Sonar (effective against fanwort, less effective against milfoil).

Treatment using Clipper and Reward is the most economical option to address the invasive weeds at Cedar Meadow Lake. Both Clipper and Reward are contact herbicides, which can be applied to targeted areas of dense growth. Clipper and Reward were last applied to 22.7 acres of Cedar Meadow Lake on June 17th, 2015 and were noted to provide effective control of the target species.

Use of Sonar is not recommended at this time. Sonar is a systemic herbicide which requires whole-lake application early in the growing season. Though Sonar application can be highly effective against fanwort if appropriate concentrations are maintained, this herbicide is an expensive management option.

If the District decides to apply chemical controls this year (to either all of the identified areas of variable leaf milfoil and fanwort growth, or to a portion of these areas that are causing the greatest impediment to recreational use of the lake), application could occur as early as two weeks after an applicator is under contract (~ 2 weeks is required for the applicator to apply for and receive a License to Apply from the state).

If the benefits of treatment this year are not deemed to justify the costs, due to the lateness of the season, we recommend that a thorough mapping of the lake occur in early June of 2022 so that herbicide application can be initiated early in the growing season. A post-treatment mapping event to evaluate the effectiveness of the treatment would be also recommended.

We additionally suggest the addition of a new on-call budget to allow for rapid response to any unforeseen issues in 2021 and 2022, as the current on call task is now closed.

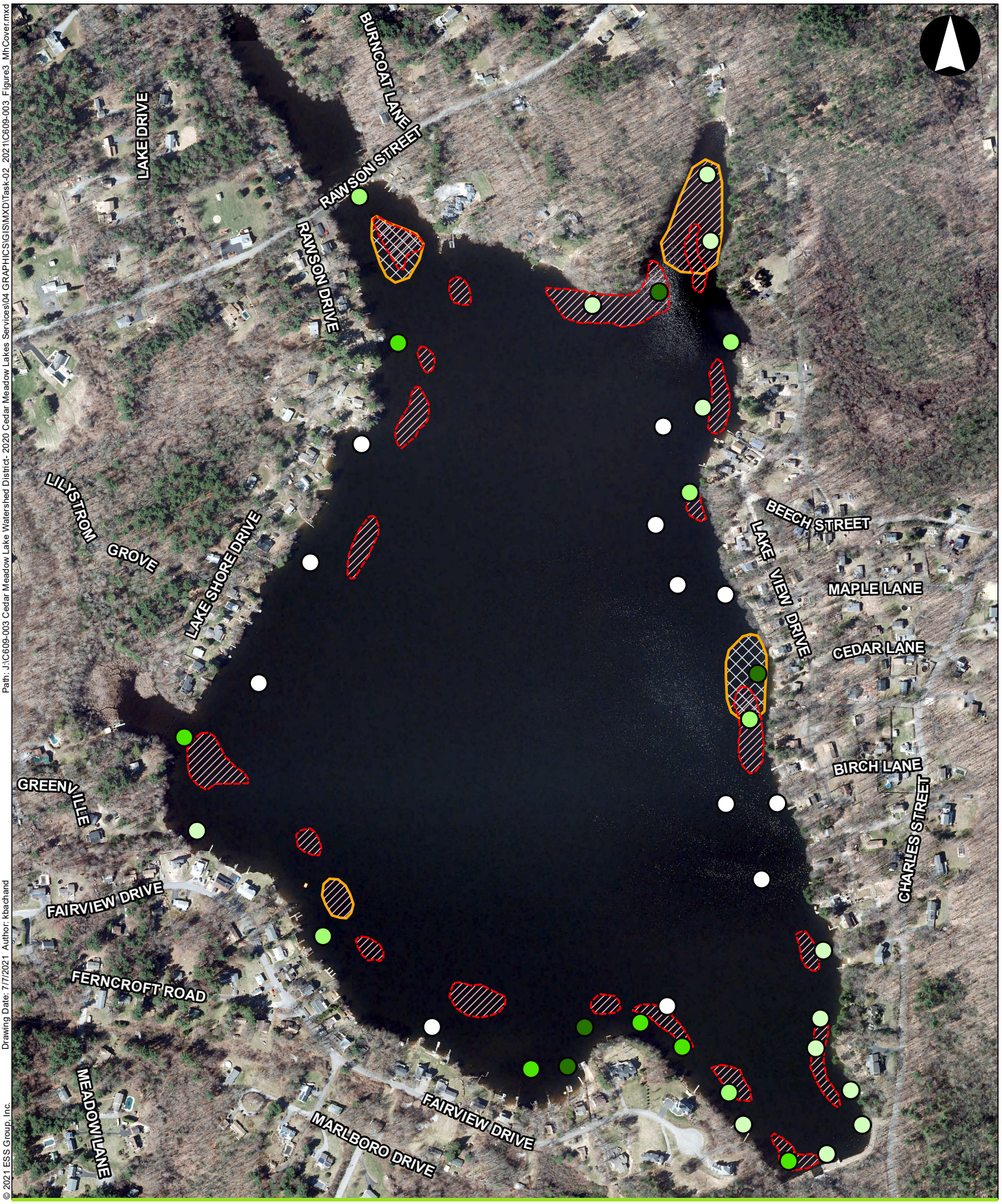
Sincerely,

ESS GROUP, INC.

Anna L. Chase

Anna Chase
Project Scientist

Attachments: Figures 1 and 2



Drawing Date: 7/7/2021 Author: kbachand
Path: J:\C609-003 Cedar Meadow Lake Watershed District- 2020 Cedar Meadow Lakes Services\04 GRAPHICS\GIS\MXD\Task-02_2021\C609-003_Figure3_MhCover.mxd

environmental consulting & engineering services

0 250 500 Feet

Cedar Meadow Lake 2021

Leicester, Massachusetts

Source:
1) GPS data, ESS 2021
2) MassGIS, Aerial Imagery, 2019
3) Cedar Meadow Lake Watershed District, Other Plant Cover areas, 2021

Variable Leaf Milfoil Cover

- 0%
- 1% to 25%
- 26% to 50%
- 51% to 75%
- 76% to 100%
- Patches Identified by ESS
- Patches Identified by Client
- Area of Dense Growth
- Area of Very Dense Growth

Variable Leaf Milfoil Cover
June 30, 2021

Figure 1

Drawing Date: 7/7/2021 Author: kbachand

Path: J:\C609-003 Cedar Meadow Lake Watershed District- 2020 Cedar Meadow Lakes Services\04 GRAPHICS\GIS\MXD\Task-02_2021\C609-003_Figure2_CcCover.mxd

ess group
environmental consulting & engineering services

0 250 500 Feet

Cedar Meadow Lake 2021
Leicester, Massachusetts

Source:
1) GPS data, ESS 2021
2) MassGIS, Aerial Imagery, 2019
3) Cedar Meadow Lake Watershed District, Other Plant Cover areas, 2021

Fanwort Cover
- 0%
- 1% to 25%
- 26% to 50%
- 51% to 75%
- 76% to 100%
- Dense patches of fanwort present

Fanwort Cover
June 30, 2021

Figure 2