

# Town of Ayer CONSERVATION COMMISSION

Town Hall ♦ One Main Street ♦ Ayer, MA 01432  
Phone 978-772-8220 ext. 143 ♦ Fax 978-772-8208 ♦ [concom@ayer.ma.us](mailto:concom@ayer.ma.us)



1:50 pm

RECEIVED

DEC 05 2022

TOWN OF AYER  
TOWN CLERK

## MEETING AGENDA (In Person) Thursday, December 8, 2022

### 7:00 PM GENERAL BUSINESS / OPEN SESSION

- Approval of Meeting Minutes for November 10, 2022
- Public Input

**Request for Abbreviated Notice of Resource Area Delineation (ANRAD) Orion Park Ayer MA**

**Discussion – Fiscal Year 2023 Budget**

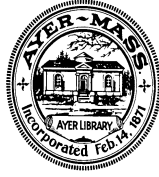
**Discussion – Pond Year End Report**

**Discussion- Conservation Tree Policy**

**CONSERVATION OFFICE AND MEMBER UPDATES**

9:00 PM ADJOURN

Next Scheduled Meeting: 7 PM, December 22, 2022



## **Town of Ayer Conservation Commission**

Town Hall \* One Main Street \* Ayer, MA 01432 \* 978-772-8220, ext. 143  
Minutes for **11/10/2022**

Location: Ayer Town Hall, 1st Floor

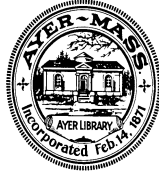
Present: Jon Schmalenberger (Chair), Mark Phillips (Vice-Chair), George Bacon (Member), Jessica Gugino (Member/Clerk), Heather Hampson (Conservation Agent)

Not Present: Jen Amaya (Member)

APAC taped: YES

### **7:00 PM – Open Meeting**

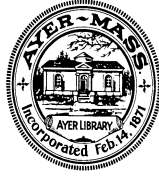
- **Confirmation of Agenda**
  - G. Bacon moved to confirm the agenda as posted; M. Phillips 2<sup>nd</sup>.
    - Motion approved unanimously 4-0.
- **Approval of Meeting Minutes**
  - G. Bacon moved to accept the minutes for 10/27/2022 as written; M. Phillips 2<sup>nd</sup>.
    - Motion approved unanimously 4-0.
- **Public Input**
  - Frank Macklin, of 43 Groton Harvard Road, was present to bring to the Commission's attention that 'Flannagan Pond' was misspelled as 'Flannigan Pond' on the Waterways Signs installed in late summer.
    - Commission members were grateful to have this error pointed out and M. Phillips will see about ordering replacement signs.
      - All were in agreement that full blame for this travesty lay on the shoulders of Commissioner J. Amaya who was sadly not present to defend herself.
    - It was also noted that the QR codes are now working on the signs to link to the Town website for more information on each waterbody.
- **Request for Certificate of Compliance (COC) – 138 Washington Street, Lot A, Northeast Site Development, MassDEP # 100-0461**
  - H. Hampson did a site inspection on 11/4 with Joe Levine, of Northeast Site Development, and saw no issues.
    - Grass has grown in to stabilize open soil.
  - From photographs provided, M. Phillips asked if the spacing was sufficiently tight enough between the boulders placed to demarcate lawn from buffer zone where permitted activities were limited because of the presence of nearby wetlands.
    - Ideally, the boulders should not allow for passage of a lawn mower, etc.
    - H. Hampson will double-check that the boulders are approximately 6 ft. apart, not 8-10 ft.
      - She said there are extra boulders on site so if more are needed, it should not be a problem.



## **Town of Ayer Conservation Commission**

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Minutes for **11/10/2022**

- G. Bacon moved to issue a COC for 100-0461, with the caveat that H. Hampson will ensure the required boulders are adequately spaced; M. Phillips 2<sup>nd</sup>.
  - Motion approved unanimously 4-0 and the COC was signed.
- **Request for Certificate of Compliance (COC) – 136 Washington Street, Lot B, Northeast Site Development, MassDEP # 100-0462**
  - The same details apply as in the above Request for COC.
  - G. Bacon moved to issue a COC for 100-0462, with the caveat that H. Hampson will ensure the required boulders are adequately spaced; M. Phillips 2<sup>nd</sup>.
    - Motion approved unanimously 4-0 and the COC was signed.
- **Discussion: Alternative Pond Treatments for Invasive Aquatic Weeds**
  - Susan Tordella, of 5 Hedgeway, addressed the Commission about her concern over the use of chemicals to treat Sandy, Flannagan, and Pine Meadow ponds in order to control invasive weed growth.
    - In her view, chemical treatment is not working (a view not shared by Commission members); weeds become resistant to chemicals over time; and the buildup of organic matter creates more problems.
    - Her concerns have risen more following the severe toxic blue-green algae (cyanobacteria) bloom that closed Sandy Pond at the beginning of September and only recently has begun to reach levels below the requirement of a Public Health Advisory.
  - Ms. Tordella distributed a handout detailing alternative methods, some used by the towns of Harvard and Littleton.
    - For Spectacle Pond in Littleton, Rob Hartz was used to provide information in the handout about eco-harvesting to mechanically remove weeds that are then composted and resold, in their case by Dirt Doctor in Acton.
    - For Bare Hill Pond in Harvard, Bruce Leicher was used to provide information in the handout about their strategies of drawing down the pond and pulling weeds once or twice a year as well as installing rain gardens to capture phosphorous runoff in high use areas.
    - The handout also cited Mr. Leicher's suggestion that ConCom figure out how to enforce the existing state law (MGL Section 65A) under the jurisdiction of the Mass. Department of Agricultural Resources (MDAR), perhaps through the use of significant fines.
    - Ms. Tordella also urged starting a social marketing campaign to educate people on the harm caused by the use of the wrong fertilizer and other practices.
    - The handout brought up but acknowledged that Ms. Tordella's previous suggestion on the use of irradiated (sterilized) Chinese carp was illegal in Massachusetts.
  - Lengthy discussion followed.
    - H. Hampson said she was interested in reducing the use of chemicals and doing more education; she will research some of the strategies used by other towns,

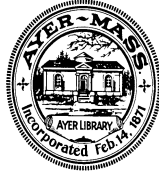


## **Town of Ayer Conservation Commission**

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Minutes for **11/10/2022**

including the use of crushed stone around driveways to provide additional filtration.

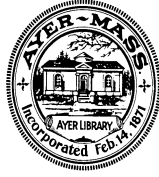
- Some points of clarification were also made:
  - The two boards at Balch Dam (aka East Main Street Spillway) are removed in November (and put back in the following May) in order to seasonally draw down the water level in Sandy and Flannagan ponds to a small degree.
    - This is as much as the ponds can be drawn down; physically there is no other way to adjust water levels without removal of the dam itself.
  - Most of the land around Sandy and Flannagan ponds is privately owned, which would impede the Town installing more rain gardens.
    - H. Hampson also said a lot of the land immediately abutting the ponds is naturally vegetated already.
  - It was noted that even if the Fertilizer Bylaw passed by the Town a couple years ago, but then rejected by the Attorney General's office, had gone into effect, the question of how it was to be enforced was substantial.
    - While the Commission would not want to encourage a situation where neighbors spied on neighbors, J. Schmalenberger suggested ConCom could make requests about kinds of fertilizers used to local distributors.
    - With the failure of the attempted local bylaw, ConCom was also given to understand that enforcement was in the hands of the State/MDAR.
- H. Hampson spoke of sending educational pamphlets out, especially to residents living on or near the ponds.
  - She also suggested Ms. Tordella look at MassDEP's website for raingarden information, as well as checking out the U. Mass. Amherst Extension for other suggestions.
  - G. Bacon said the University of New Hampshire program on rain gardens should also be looked at.
- Ms. Tordella asked what if Ayer had a Lake Association, similar to Littleton.
  - While Ms. Tordella was appointed to the Pond & Dam Committee (initially created by the Select Board back in 2011 and under their jurisdiction), it has not met since her appointment was made.
  - One suggestion was that Ms. Tordella seek to revitalize that Committee.
    - She said she had spoken to DPW Director Dan Van Schalkwyk about this a bit and he had mentioned the possibility of incorporating the committee into the DPW's sustainability commission.
- The Commission is not averse to considering other methods, but as a volunteer board whose resources have already been stretched thin in recent years, it would be helpful to have other entities contributing more.
  - J. Gugino noted that Joe Onorato, of Water & Wetlands, has offered in the past to hold an informational public meeting about ponds and maintaining their health and this might be a good educational step for the Commission to take in the spring, especially now that pandemic restrictions have eased.



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- Water & Wetlands has done the pond treatments in Ayer for the last two years.
  - Certainly the recent toxic algae bloom that closed Sandy Pond to public use can be used as an incentive for encouraging neighbors to the ponds to take even simple steps to better protect these natural resources.
- J. Schmalenberger thanked Ms. Tordella for her input and invited her to come back for more discussion with ConCom when more information has been gathered.
  - He also noted that any changes to the treatment program would likely not take effect in the coming treatment year as arrangements start to be made over the winter.
- **Discussion: “Ayer-Devens Neighborhood Pocket Forest Planting Pilot Project”**
  - This joint project was the recipient of a 2022 Municipal Vulnerability Preparedness (MVP) Action Grant from the Massachusetts Executive Office of Environmental Affairs.
  - An overview of the project was presented by Jim Newman, of Linnean Solutions (Cambridge, MA), and Landscape Architect Casey-Lee Bastien, of BSC Group.
    - Alan Manoian, Director of Ayer Office of Community & Economic Development, will act as administrator of the project, coordinating also with the Devens Enterprise Commission.
    - The Regenerative Design Group, Greefield, MA, is involved with the project as well.
  - The grant funds a pilot project meant to engage residents to guide, plan, design, and plant “Neighborhood Pocket Forests.”
    - At its current stage, the project is seeking input from residents as well as boards like the Conservation Commission or Planning Board in order to identify optimal sites for these small forests, generally a quarter to a half acre in size.
      - It doesn’t take a huge number of trees to make a big difference.
    - Two sites currently under consideration for Ayer are at the Town Depot and behind St. Mary’s Church while information on other potential sites is also being sought.
  - Criteria considered in the selection of sites include:
    - Is the site feasible? – whether public property or private with the agreement of the landowner?;
    - Is the site strategic? – who does it serve? what value does it bring to a neighborhood?
    - Is it a location where these actions taken will positively change the trajectory of a property and surroundings?
  - The project addresses the growing challenges of climate change through the planting of small, dense pockets of trees that will locally:
    - maximize carbon sequestration;
    - contribute to the absorption of particulate matter, nitrogen, sulfur, and ozone, thereby improving air quality and reducing pollution;
    - provide natural filtration of stormwater runoff, improving water quality;



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- have a cooling impact to counter the effects of ‘heat islands’ produced when impervious surfaces overly dominate an area.
    - (Ideally, built urban/suburban environments should have at least 35% surface covered by tree canopy.)
  - It was noted that pocket forests as ‘green infrastructure’ are not primarily designed to be inhabited and used like neighborhood pocket parks.
    - They are, however, intended to establish healthier and more resilient environments, particularly to the benefit of less advantaged neighborhoods.
  - In addition, it is hoped that pocket forests designed with appropriate tree species will function both as support and as biodiversity feeders to larger nearby forests in the community – helping to restore and repopulate.
    - This is particularly useful in New England where most of the old forests were cleared in previous centuries, and while new forests have regrown in the last hundred years or so, they often lack the diversity of species that were originally present in the past.
  - A public forum is scheduled for 6 p.m. on Nov. 16 at Town Hall for residents to better understand the environmental benefits of these forests and learn of ways they can participate.
  - The project will also seek to hire local students to help with monitoring and maintaining sites for longterm protection.
- **Conservation Commission Office and Member Updates**
    - H. Hampson has been on vacation this week. However, she participated the previous week in a field trip into Cambridge to look at a model pocket forest. No work took place last week at Ayer Solar II and no updates have been received from Rohit Garg. She is continuing to work on developing the tree policy.
  - **8:50 PM – Adjourn Meeting**
    - GB moved to adjourn; MP 2<sup>nd</sup>.
      - Motion approved unanimously 4-0.

**Minutes Recorded and Submitted by Jessica G. Gugino, Clerk**

**Date / Signature of Approval:** \_\_\_\_\_

# ABBREVIATED NOTICE OF RESOURCE AREA DELINEATION

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## Orion Park Drive Map 7, Lots 5, 7, 36, 37, 38 Ayer, Massachusetts



**SUBMITTED TO:**

Town of Ayer  
Conservation Commission  
Town Hall, 1 Main Street  
Ayer, Massachusetts 01432

**PREPARED FOR:**

Orion Park, LLC  
1 Orion Park Drive  
Ayer, Massachusetts 01701

**PREPARED BY:**

Lucas Environmental, LLC  
500A Washington Street  
Quincy, Massachusetts 02169

**IN ASSOCIATION WITH:**

Chess Engineering, LLC  
PO Box 9480  
Lowell, MA 01853

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REPORT DATE: November 9, 2022





500A Washington Street, Quincy, MA 02169

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November 9, 2022

Town of Ayer Conservation Commission  
Town Hall  
1 Main Street  
Ayer, MA 01432

Re: Abbreviated Notice of Resource Area Delineation  
Orion Park Drive (Map 7, Lots 5, 7, 36, 37 & 38)  
Ayer, Massachusetts

Members of the Ayer Conservation Commission:

On behalf of Orion Park, LLC, and in association with Chess Engineering, LLC, Lucas Environmental, LLC (LE) is pleased to submit this Abbreviated Notice of Resource Area Delineation (ANRAD) to confirm the delineation and identification of wetland resource areas for the subject property located at Orion Park Drive in Ayer, Massachusetts. This ANRAD is submitted in order to confirm the boundaries of wetland resource areas on the site that are regulated under the Massachusetts Wetlands Protection Act (WPA; M.G.L. Ch. 131, Section 40) and implementing regulations (310 CMR 10.00 et seq.), and the Town of Ayer Wetlands Protection Bylaw (Article XXVI) and the Regulations for Administering the Town of Ayer Wetland Bylaw.

Enclosed please find six (6) copies of the ANRAD submittal and full-size plans. The ANRAD application package includes the WPA Form 4A, existing conditions narrative, figures, photographic documentation, abutter notification, filing fees, MassDEP data forms, and Record Conditions Plan of Land (6 sheets). A link to an electronic copy of the pdf file of the ANRAD application and supporting documentation will be provided concurrently with this submittal via email. We respectfully request that you place this matter on your agenda for the December 8, 2022, Public Hearing.

If you have any questions, please do not hesitate to contact me at 617.405.4118 or [jho@lucasenviro.com](mailto:jho@lucasenviro.com). Thank you for your consideration in this matter.

Sincerely,  
**LUCAS ENVIRONMENTAL, LLC**

Joseph H. Orzel, PWS, CWS  
Project Manager/Wetland Scientist

cc: Applicant & Owner: Orion Park, LLC, c/o Frank Widmayer (electronic copy)  
Chess Engineering, LLC (electronic copy)  
MassDEP – CERO





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## SECTION I – FORMS

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**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 4A – Abbreviated Notice of Resource Area Delineation**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

\_\_\_\_\_  
 MassDEP File Number

\_\_\_\_\_  
 Document Transaction Number

Ayer  
 City/Town

**A. General Information**

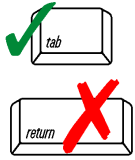
1. Project Location (**Note:** electronic filers will click on button for GIS locator):

Orion Park Drive Ayer 01432  
 a. Street Address b. City/Town c. Zip Code

Latitude and Longitude: 42.570260° N 71.532436° W  
 d. Latitude e. Longitude

Map 7 Parcels 5, 7, 36, 37 & 38  
 f. Assessors Map/Plat Number g. Parcel /Lot Number

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



2. Applicant:

Frank Widmayer  
 a. First Name b. Last Name

Orion Park, LLC  
 c. Organization

1 Orion Park Drive  
 d. Mailing Address

Ayer MA 01432  
 e. City/Town f. State g. Zip Code

978.772.6000 orionfjw@rcn.com  
 h. Phone Number i. Fax Number j. Email Address

3. Property owner (if different from applicant):

Check if more than one owner (attach additional sheet with names and contact information)

\_\_\_\_\_  
 a. First Name b. Last Name

\_\_\_\_\_  
 c. Organization

\_\_\_\_\_  
 d. Mailing Address

\_\_\_\_\_  
 e. City/Town f. State g. Zip Code

\_\_\_\_\_  
 h. Phone Number i. Fax Number j. Email Address

**Note:** Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

4. Representative (if any):

Joseph Orzel  
 a. Contact Person First Name b. Contact Person Last Name

Lucas Environmental, LLC  
 c. Organization

500A Washingotn Street  
 d. Mailing Address

Quincy MA 02169  
 e. City/Town f. State g. Zip Code

617.405.4118 617.405.4465 jho@lucasenviro.com  
 h. Phone Number i. Fax Number j. Email Address

Fees will be calculated for online users.

5. Total WPA Fee Paid (from attached ANRAD Wetland Fee Transmittal Form):

\$2,000.00 \$987.50 \$1,012.50  
 a. Total Fee Paid b. State Fee Paid c. City/Town Fee Paid



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 4A – Abbreviated Notice of**  
**Resource Area Delineation**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

\_\_\_\_\_  
 MassDEP File Number

\_\_\_\_\_  
 Document Transaction Number

\_\_\_\_\_  
 Ayer  
 City/Town

## B. Area(s) Delineated

1. Bordering Vegetated Wetland (BVW) 971 linear feet  
Linear Feet of Boundary Delineated
2. Check all methods used to delineate the Bordering Vegetated Wetland (BVW) boundary:
  - a.  MassDEP BVW Field Data Form (attached)
  - b.  Other Methods for Determining the BVW boundary (attach documentation):
    1.  50% or more wetland indicator plants
    2.  Saturated/inundated conditions exist
    3.  Groundwater indicators
    4.  Direct observation
    5.  Hydric soil indicators
    6.  Credible evidence of conditions prior to disturbance
3. Indicate any other resource area boundaries that are delineated:
 

<u>Isolated Land Subject to Flooding</u>	<u>368 linear feet</u>
a. Resource Area	b. Linear Feet Delineated
<u>Isolated Vegetated Wetland</u>	<u>324 linear feet</u>
c. Resource Area	d. Linear Feet Delineated

## C. Additional Information

Applicants must include the following plans with this Abbreviated Notice of Resource Area Delineation. See instructions for details. **Online Users:** Attach the Document Transaction Number (provided on your receipt page) for any of the following information you submit to the Department.

1.  ANRAD (Delineation Plans only)
2.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
3.  Plans identifying the boundaries of the Bordering Vegetated Wetlands (BVW) (and/or other resource areas, if applicable).
4.  List the titles and final revision dates for all plans and other materials submitted with this Abbreviated Notice of Resource Area Delineation.



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 4A – Abbreviated Notice of  
 Resource Area Delineation**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 \_\_\_\_\_  
 MassDEP File Number  
 \_\_\_\_\_  
 Document Transaction Number  
 \_\_\_\_\_  
 Ayer  
 \_\_\_\_\_  
 City/Town

**D. Fees**

The fees for work proposed under each Abbreviated Notice of Resource Area Delineation must be calculated and submitted to the Conservation Commission and the Department (see Instructions and Wetland Fee Transmittal Form).

- 1.  Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to the attached Wetland Fee Transmittal Form) to confirm fee payment:

1129 \_\_\_\_\_

2. Municipal Check Number

November 4, 2022 \_\_\_\_\_

3. Check date

1130 \_\_\_\_\_

4. State Check Number

November 4, 2022 \_\_\_\_\_

5. Check date

CHES Engineering, LLC \_\_\_\_\_

6. Payor name on check: First Name

\_\_\_\_\_

7. Payor name on check: Last Name



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 4A – Abbreviated Notice of**  
**Resource Area Delineation**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

\_\_\_\_\_  
MassDEP File Number

\_\_\_\_\_  
Document Transaction Number

\_\_\_\_\_  
Ayer  
City/Town

understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

I hereby grant permission, to the Agent or member of the Conservation Commission and the Department of Environmental Protection, to enter and inspect the area subject to this Notice at reasonable hours to evaluate the wetland resource boundaries subject to this Notice, and to require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

I acknowledge that failure to comply with these certification requirements is grounds for the Conservation Commission or the Department to take enforcement action.

\_\_\_\_\_  
*F. [Signature]*

1. Signature of Applicant

\_\_\_\_\_  
10/25/22

2. Date

\_\_\_\_\_  
*Joseph W. [Signature]*

3. Signature of Property Owner (if different)

4. Date

\_\_\_\_\_  
11/07/2022

6. Date

**For Conservation Commission:**

Two copies of the completed Abbreviated Notice of Resource Area Delineation (Form 4A), including supporting plans and documents; two copies of the ANRAD Wetland Fee Transmittal Form; and the city/town fee payment must be sent to the Conservation Commission by certified mail or hand delivery.

**For MassDEP:**

One copy of the completed Abbreviated Notice of Resource Area Delineation (Form 4A), including supporting plans and documents; one copy of the ANRAD Wetland Fee Transmittal Form; and a copy of the state fee payment must be sent to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery. (E-filers may submit these electronically.)

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



## SECTION II – NARRATIVE

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## EXISTING CONDITIONS NARRATIVE

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### 1.0 INTRODUCTION

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On behalf of Orion Park, LLC, and in association with Chess Engineering, LLC (CHESS), Lucas Environmental, LLC (LE) is pleased to submit this Abbreviated Notice of Resource Area Delineation (ANRAD) to confirm the delineation and identification of wetland resource areas for the subject property located at Orion Park Drive in Ayer, Massachusetts. This ANRAD is submitted in order to confirm the boundaries of wetland resource areas at the site that are regulated under the Massachusetts Wetlands Protection Act (WPA; M.G.L. Ch. 131, Section 40) and implementing regulations (310 CMR 10.00 et seq.), and the Town of Ayer Wetlands Protection Bylaw (Article XXVI) and Regulations for Administering the Town of Ayer Wetland Bylaw. The resource areas are depicted on the attached Record Conditions Plan of Land prepared by Chess Engineering, LLC, dated September 9, 2022.

A wetland scientist from LE conducted a wetland investigation at the project site in accordance with the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40) and regulations (310 CMR 10.00 et seq.); Section 404 of the Clean Water Act (33 U.S.C. 1344); Massachusetts Department of Environmental Protection (MassDEP) publication “Delineating Bordering Vegetated Wetlands” under the Massachusetts Wetlands Protection Act (1995); the U.S. Army Corp of Engineers (USACE) Wetland Delineation Manual (1987); the Northcentral and Northeast Regional Supplement (2012); and the Town of Ayer Wetlands Protection Bylaw and implementing regulations.

The site inspection identified the following wetland resource areas at the site:

- Bordering Vegetated Wetland (BVW)/Freshwater Wetland;
- Isolated Vegetated Wetland (IVW)/Freshwater Wetland;
- Isolated Land Subject to Flooding (ILSF); and
- Vernal Pool (although not delineated due to the time of year).

### 2.0 EXISTING CONDITIONS

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The project site is located at Orion Park Drive in Ayer, Massachusetts and is identified as Map 7, Lots 5, 7, 36, 37, and 38, on the Ayer Assessor’s Maps (i.e., the “Study Area”, See Figure 1 – USGS Map and Figure 2 – Aerial Map). The Study Area totals approximately 18.4 acres of land comprised of developed areas, uplands, and wetlands. The northeastern portion of the property (1 Orion Park Drive) is developed with a commercial building, parking lots, and landscaped areas.

The site is bounded by undeveloped forested land to the west and northwest, commercial development to the north, Westford Road to the east, and residential properties to the south. The undeveloped upland areas are primarily forested with a mix of red oak (*Quercus rubra*), black oak (*Quercus velutina*), black birch (*Betula lenta*), white pine (*Pinus strobus*), red maple (*Acer rubrum*), gray birch (*Betula populifolia*), eastern hemlock (*Tsuga canadensis*), black cherry (*Prunus serotina*), black huckleberry (*Gaylussacia baccata*), American witch-hazel (*Hamamelis virginiana*), autumn olive (*Elaeagnus umbellata*), eastern hayscented fern (*Dennstaedtia punctilobula*), and goldenrods (*Solidago spp.*).





## EXISTING CONDITIONS NARRATIVE

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No streams, intermittent or perennial, are present within the Study Area. Wetlands are present on the western and central portions of the Study Area and are described below.

A review of the current MassGIS data layer for the Massachusetts Natural Heritage Atlas (effective August 1, 2021) under the Natural Heritage and Endangered Species Program (NHESP) indicates that the western portion of the Study Area is located within Estimated Habitats of Rare Wildlife (EH 1306) and Priority Habitats of Rare Species (PH 2043). No Certified Vernal Pools under the jurisdiction of the Wetlands Protection Act Regulations (310 CMR 10.00 et seq.) or the Massachusetts Endangered Species Act (321 CMR 10.00 et seq.) occur within the Study Area; however, a mapped Potential Vernal (PVP 1375) occurs within the central portion of the Study Area (See Figure 3 – NHESP Map). This PVP is located within Wetland B (described further below).

According to the June 4, 2010, FEMA Flood Insurance Rate Maps (FIRM) for Middlesex County, Massachusetts, Maps Number 25017C0208E and 25017C0209E, the Study Area is located within Zone X, which is classified as an area of minimal flood hazard. Therefore, Bordering Land Subject to Flooding (100-year floodplain) does not exist within the Study Area (See Figure 4 – FEMA Map).

The entire Study Area is located within the Petapawag Area of Critical Environmental Concern (ACEC). The Study Area is not mapped within an Outstanding Resource Water (ORW), Watershed Protection Area, or MassDEP Wellhead Protection Area.

### 3.0 WETLAND RESOURCE AREAS

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A wetland scientist from LE conducted a wetland site investigation at the project site on July 15, 2022. The wetland investigation was performed in accordance with the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40) and regulations (310 CMR 10.00 et seq.); Section 404 of the Clean Water Act (33 U.S.C. 1344); Massachusetts Department of Environmental Protection (MassDEP) publication “Delineating Bordering Vegetated Wetlands” under the Massachusetts Wetlands Protection Act (1995); the U.S. Army Corp of Engineers (USACE) Wetland Delineation Manual (1987); the Northcentral and Northeast Regional Supplement (2012); and the Town of Ayer Wetlands Protection Bylaw and implementing regulations.

The following data sources were examined as part of the site investigation:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps
- United States Geological Survey Topographic Quadrangle;
- USGS StreamStats Program;
- MassGIS MassDEP Wetland and Hydrography Datalayers;
- MassGIS Natural Heritage Atlas Datalayers; and
- United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Soil Survey.

## EXISTING CONDITIONS NARRATIVE

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Under the Massachusetts Wetlands Protection Act and Bylaw, the wetlands near the site are regulated as described below. Section 2 of the Bylaw includes all resource areas and Buffer Zones defined under the WPA regulations. In addition, the Bylaw protects Freshwater Wetlands whether or not they border on a water body or waterway.

The Bylaw also includes the 100-Foot Buffer Zone as a Resource Area (Adjacent Upland Resource Areas) subject to greater protection than under the Act and presumes the inner portion of a Buffer Zone to have a higher ecological value than the outer portion.

### 3.1 Bordering Vegetated Wetlands/Freshwater Wetland

Section 310 CMR 10.55 of the WPA defines BVW as *freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. Wetland indicator plants are also those classified in the indicator categories of Facultative, Facultative+, Facultative Wetland-, Facultative Wetland, Facultative Wetland+, or Obligate Wetland in the National List of Plant Species That Occur in Wetlands: Massachusetts (Fish & Wildlife Service, U.S. Department of the Interior, 1988) or plants exhibiting physiological or morphological adaptations to life in saturated or inundated conditions.* Under the Bylaw, Freshwater Wetlands *shall include all wetlands whether or not they border on a water body.* BVW is present within Wetland A and is described below.

### 3.2 Isolated Vegetated Wetland/Freshwater Wetland

As defined under Section 9 of the Bylaw, Freshwater Wetlands *shall include all wetlands whether or not they border on a water body. For the purposes of this bylaw, lakes or ponds of any size, all bordering vegetated wetlands, as well as isolated vegetated wetlands shall be protected.*

Isolated Vegetated Wetlands *per se* are not regulated under the WPA. However, if an IVW ponds a sufficient volume of water, it would be regulated under the WPA as Isolated Land Subject to Flooding. The delineated IVW area is described below.

### 3.3 Land Subject to Flooding

Section 310 CMR 10.57(2)(b) of the WPA defines ILSF as *an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.*

Section 9 of the Bylaw defines Land Subject to Flooding to *include lands subject to the temporary inundation of water, whether by stormwater, groundwater or surface water, including a rise or expansion in the surface of an existing body of water, such that land not usually covered by water is flooded.*

## EXISTING CONDITIONS NARRATIVE

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The Mean Annual Highwater Line of the isolated depression was not delineated in the field; however, engineering calculations were performed to determine if the area meets the definition of ILSF under the WPA and Bylaw. The ISLF/isolated depression is described below.

### 3.4 Resource Area Descriptions

Photographic documentation (Appendix A) has been included for the wetland resource areas described below and Wetland Delineation Field Data Forms are included for Wetland A (Appendix D).

#### *Wetland A (BVW/Freshwater Wetland)*

Wetland A is red maple swamp located in the western portion of the Study Area. This wetland connects to Long Pond, which is located approximately 1,100 feet west of the Study Area. Wetland A was delineated with pink survey tape numbered sequentially from WFA-1 to WFA-38. The 100-Foot Buffer Zone/Adjacent Upland Resource Area (AURA) from the edge of BVW extend into the Study Area.

Wetland A is dominated by mature hardwood forest with a generally closed canopy and relatively dense understory vegetation. Common vegetation observed within the wetland includes red maple, highbush blueberry (*Vaccinium corymbosum*), glossy buckthorn (*Frangula alnus*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), skunk cabbage (*Symplocarpus foetidus*), and poison ivy (*Toxicodendron radicans*). Hydric soil mapped within this wetland consists of Swansea muck. Soils in adjacent upland areas are mapped as Hollis-Rock outcrop-Charlton complex and Quonset sandy loam. Observed soils consisted of a gravelly sand with shallow redoximorphic features and a depleted matrix. State and federal boundaries are coincident.

#### *Wetland B (IVW/Freshwater Wetland)*

Wetland B consists of an IVW/Freshwater Wetland located at an isolated depression within the central portion of the Study Area. Wetland B was delineated with pink survey tape numbered sequentially from WFB-1 to WFB-11. The 100-Foot Buffer Zone/AURA from the edge of IVW extend into the Study Area. Common vegetation observed within the wetland includes red maple, highbush blueberry, and glossy buckthorn in the outer edges of the wetland, and sensitive fern, royal fern (*Osmunda regalis*), marsh fern (*Thelypteris palustris*), and various sedges in the interior portion. Mapped soils within this area are non-hydric, excessively drained Quonset sandy loam. Observed soil within the wetland is mucky silt with a thick surface of water-stained leaves. State and federal boundaries are coincident.

#### *ILSF Discussion*

Wetland B is confined to an isolated depression and does not border on a stream or water body. Under the WPA, to qualify as ILSF the area must meet two criteria as defined in the WPA Regulations (310 CMR 10.57(2)(b)). First, the isolated wetland must be an isolated depression or closed basin without an inlet or an outlet. Second, at least once a year, the wetland must confine standing water to a volume of at least ¼ acre-feet to an average depth of at least six inches. In 1985 MassDEP also issued a program policy (DWW Policy 85-2) to assist engineers and consultants with interpreting the definition of ILSF and calculating the boundary of ILSF. In accordance with MassDEP Policy 85-2 on ILSF, the majority of the IVW meets the first criteria as an isolated basin with a restrictive outlet.



## EXISTING CONDITIONS NARRATIVE

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Per section 10.57(2)(b)3. regarding the boundary of the ILSF, the *applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said water. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the Isolated Land Subject to Flooding and shall be further based upon the assumption that there is no infiltration of said run-off into the soil within the Isolated Land Subject to Flooding.*

ILSF calculations were prepared by CHESSE in accordance with the above-mentioned definition and guidance documents (See Appendix E). CHESSE determined the boundary of the ILSF extends to an elevation of 263.4 feet (NAVD 88).

Although the calculated volume from the 100-year storm does not meet the 0.25-acre feet volume or six-inch average depth requirements, based on field observations, the depression has the physical capacity to hold the required volume and previous observations described by Oxbow Associates, Inc. indicated a water depth of approximately five feet during the winter. Therefore, it appears that the depression has been previously observed containing the required volume and depth of water.

As noted previously, under the Bylaw, Land Subject to Flooding *shall include lands subject to the temporary inundation of water, whether by stormwater, groundwater or surface water, including a rise or expansion in the surface of an existing body of water, such that land not usually covered by water is flooded.* The Bylaw does not describe any volume requirements for ILSF and is assumed coincident with the engineering calculations required by MassDEP.

### *Vernal Pool Discussion*

Field observation during the July 15, 2022, site inspection indicated a high likelihood that Wetland B (IVW) functions as a vernal pool. In addition, LE reviewed a previous report prepared by Oxbow Associates, Inc., titled "Rare and Endangered Wildlife Field Assessment for Notice of Intent MA DEP File No. 100-0292", dated June 28, 2006, in which the isolated depression at the site (Wetland B) was observed to have several hundred wood frog egg masses, ten spotted salamander egg masses, and other obligate vernal pool organisms.

Under Section 3.C. of the Bylaw, *the Commission shall presume that all areas meeting the definition of "vernal pools" under Section 9 of the bylaw, including the adjacent upland area, perform essential and valuable habitat functions that merit protection.* Because of the time of year, the boundary of this vernal pool area was not field delineated, is not included in the Record Conditions Plan of Land, and is not being reviewed under this ANRAD application. The boundary will be delineated in the spring and included in any future permitting; however, it is located entirely within the limit of Wetland B.

### 4.0 SUMMARY

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The Applicant is seeking to confirm the accuracy of the characterization and delineation of the wetland resource areas delineated within the Study Area. The Applicant requests confirmation of the resource areas as shown on the Record Conditions Plan of Land, which include:

- On-site Bordering Vegetated Wetlands delineation subject to the Massachusetts Wetlands Protection Act and the Town of Ayer Wetlands Protection Bylaw;
  - Wetland A flags WFA-1 to WFA-38.
- On-site Isolated Vegetated Wetlands delineation subject to the Town of Ayer Wetlands Protection Bylaw;
  - Wetland B flags WFB-1 to WFB-11.
- On-site Isolated Land Subject to Flooding delineation, as determined in accordance with MassDEP Policy 85-2 on ILSF and as indicated on the Record Conditions Plan of Land, subject to the Massachusetts Wetlands Protection Act and the Town of Ayer Wetlands Protection Bylaw.
- No other resource areas are present on the site, except for the Vernal Pool located within Wetland B.

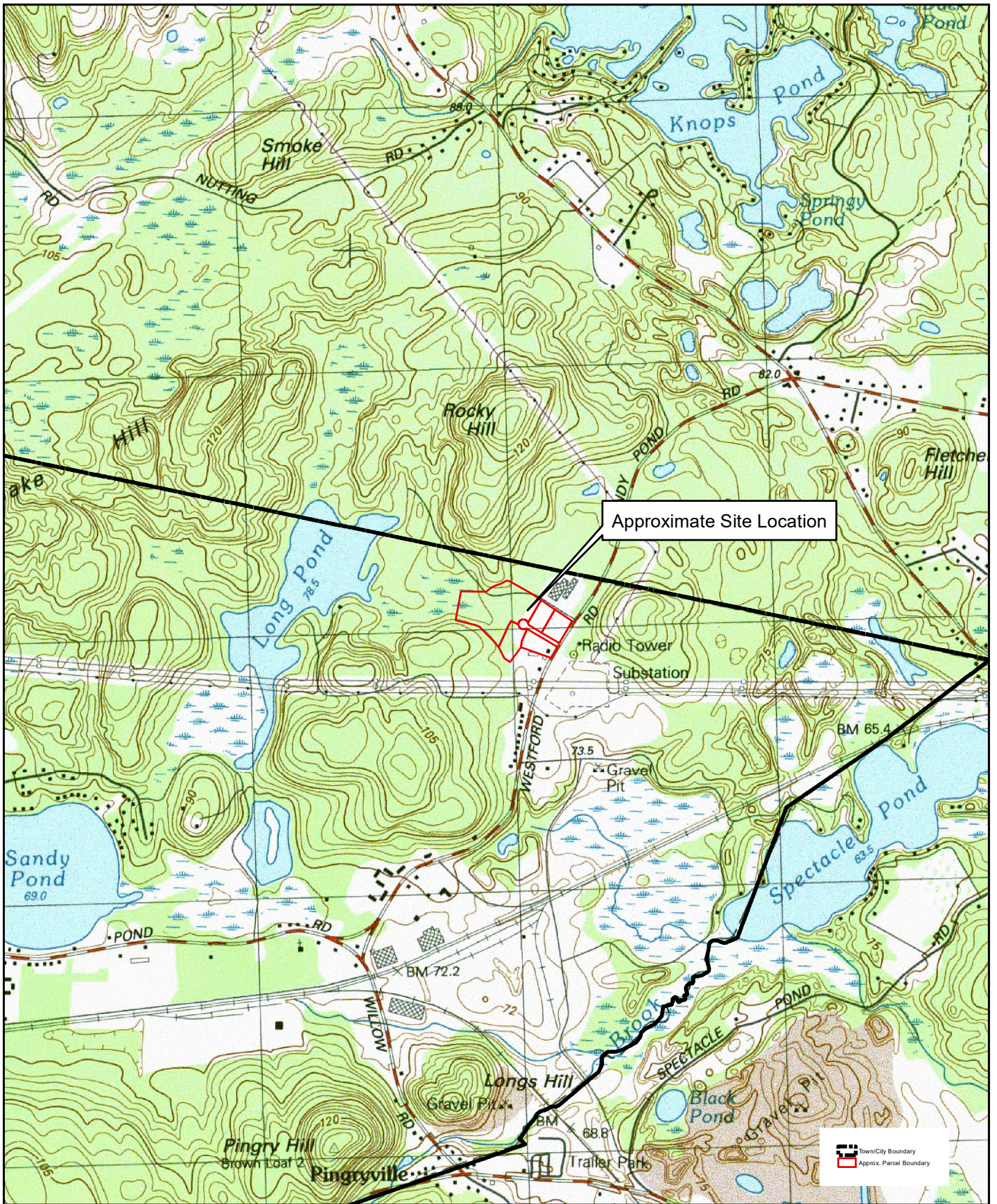
Other than confirmation of the accuracy of on-site resource area delineations, the Applicant is requesting confirmation of the extent of the 100-Foot Buffer Zones/Adjacent Upland Resource Areas and the 25-Foot Buffer Zones on the subject property.

The Applicant respectfully requests that the Conservation Commission issue an Order of Resource Area Delineation under the Wetlands Protection Act and the Town of Ayer Wetlands Protection Bylaw confirming the accuracy of the characterization and delineation of the areas noted above located at Orion Park Drive (PID: Map 7, Lots 5, 7, 36, 37, and 38) as described in this ANRAD application and shown on accompanying Record Conditions Plan of Land.

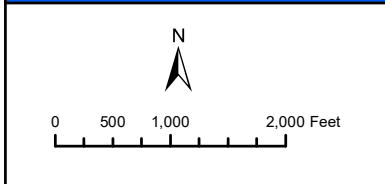


## SECTION III – FIGURES

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Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Topographic Quadrangle



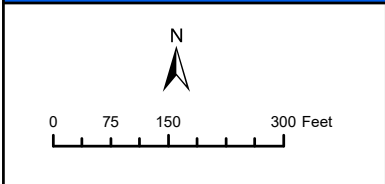
**USGS Map**  
**Orion Park Drive**  
**Ayer, MA**

**FIGURE 1**

**LUCAS**  
 ENVIRONMENTAL, LLC



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)

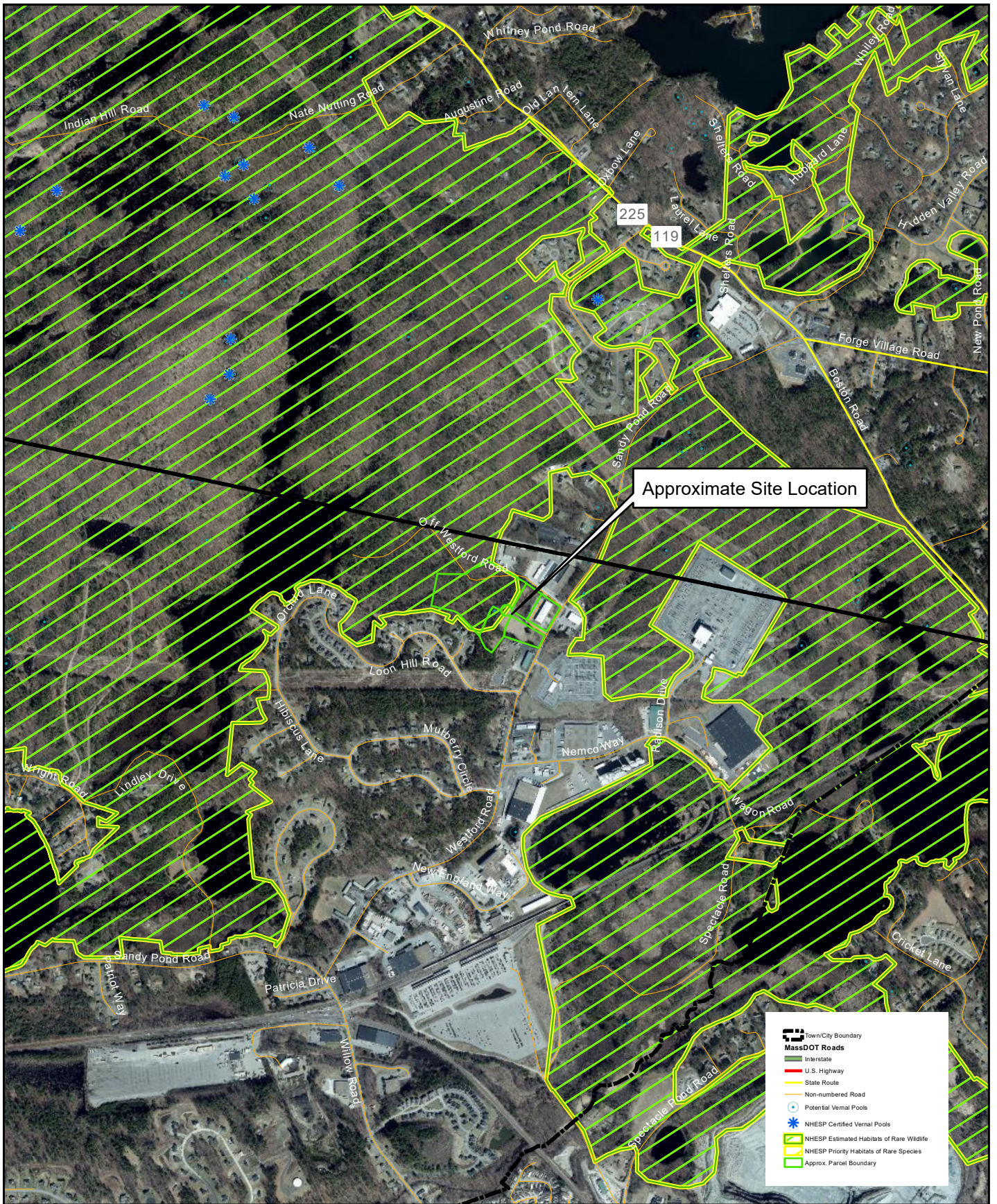


**Aerial Map**  
**Orion Park Drive**  
**Ayer, MA**

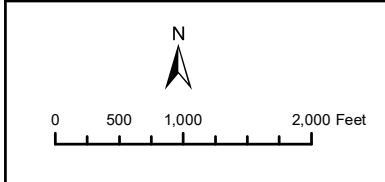
**FIGURE 2**

**LUCAS**  
 ENVIRONMENTAL, LLC





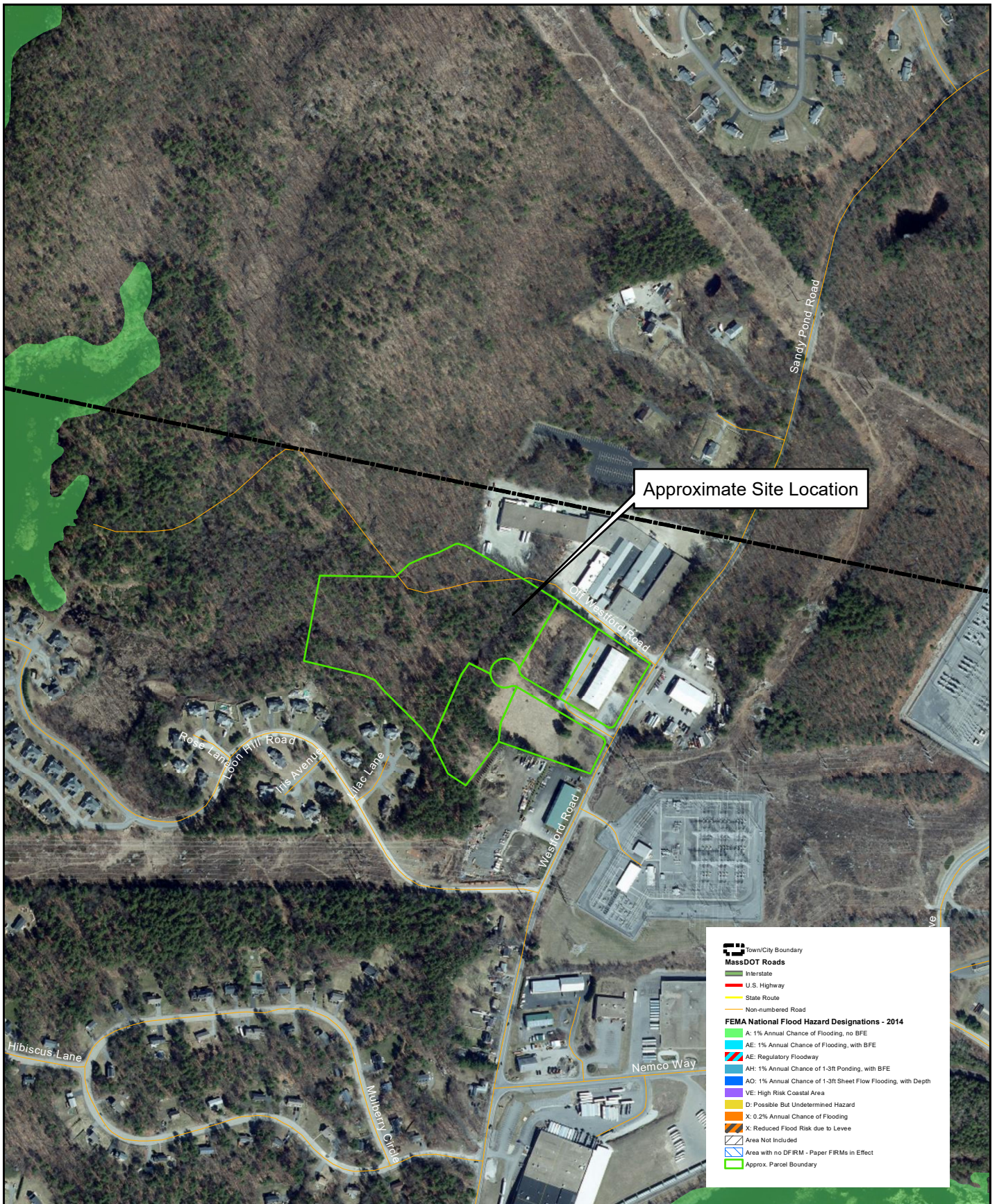
Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



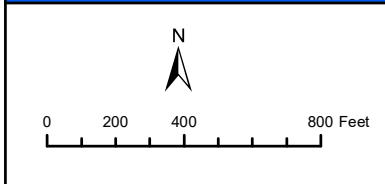
**NHESP Map**  
**Orion Park Drive**  
**Ayer, MA**

**FIGURE 3**

**LUCAS**  
 ENVIRONMENTAL, LLC



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



**FEMA Map**  
**Orion Park Drive**  
**Ayer, MA**



## SECTION IV – APPENDICES

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## **APPENDIX A**

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# **PHOTOGRAPHIC DOCUMENTATION**

## PHOTOGRAPHIC DOCUMENTATION

DATE: July 15, 2022



Photograph 1: Existing building on the site, taken from the rear parking lot.



Photograph 2: Typical upland area at the property.

## PHOTOGRAPHIC DOCUMENTATION

DATE: July 15, 2022



Photograph 3: Wooded trail located on the property.



Photograph 4: Wetland A near flag WFA-1.

## PHOTOGRAPHIC DOCUMENTATION

DATE: July 15, 2022



Photograph 5: Wetland A near flag WFA-27.



Photograph 6: View toward the center of Wetland B.

## PHOTOGRAPHIC DOCUMENTATION

DATE: July 15, 2022



Photograph 7: Central area of Wetland B.



Photograph 8: Green frog (center foreground) observed within Wetland B.



**ABUTTER INFORMATION**

**Notification to Abutters per the Massachusetts Wetlands Protection Act  
and the Town of Ayer Wetlands Protection Bylaw**

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

A. The name of the applicant is: Orion Park, LLC

B. The name of the land owner is Orion Park, LLC

C. The address of the lot where the resource area is located or activity is proposed is:

Orion Park Drive, Map 7, Lots 5, 7, 36, 37 & 38

D. The applicant has filed: (check one)

Notice of Intent

Abbreviated Notice of Intent

Request for an Amendment to an Order of Conditions

Abbreviated Notice of Resource Area Delineation

The applicant has filed the above application with the Ayer Conservation Commission and is seeking:

confirmation of resource area delineation, or

permission to remove, fill, dredge or alter an Area Subject to Protection under the Wetlands Protection Act (Massachusetts General Law Chapter 131, Section 40).

E. Copies of the above referenced document/filing may be examined at the Conservation Commission Office, Town Hall, 1 Main Street, Ayer, MA, between the hours of 10:00 a.m. and 1:00 p.m., Wednesdays and Fridays. Please schedule an appointment by calling (978) 772-8249.

F. Copies of the above referenced document/filing may be obtained from: (check one)

Applicant (contact information: \_\_\_\_\_)

Owner (contact information: \_\_\_\_\_)

Applicant's Representative (contact information: \_\_\_\_\_)

Ayer Conservation Administrator 978-772-8249 (Wednesdays & Fridays 9:30a.m.-1:30p.m.)

G. Project Description:

The Applicant is seeking confirmation of the delineation and identification of wetland resource areas for the subject property located at Orion Park Drive. No work is being proposed under this application.

H. Information regarding the date, time, and place of the hearing may be obtained from the Ayer Conservation Office by calling 978-772-8249 between the hours of 9:30 a.m. and 1:30 p.m., Wednesdays and Fridays.

Note: Notice of the public hearing, including its date, time, and place, will be published at least five (5) business days prior to the hearing date in either *The Public Spirit* or *The Lowell Sun* newspapers. Such notice will also be posted at the Ayer Town Hall no fewer than forty-eight (48) hours in advance of the meeting.

Note: You also may contact the Department of Environmental Protection Regional Office for more information about this application or the Wetlands Protection Act at (508) 792-7650.

NOTE: To preserve your appeal rights you must submit comments/concerns in writing. Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.



## CALCULATED FILING FEE STATEMENT

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The Applicant is seeking confirmation of wetland resource areas. No work activity is proposed at this time. Confirmation of resource area boundaries is included under Category 6 of the WPA Wetlands Filing Fees.

### **Wetlands Protection Act Fees:**

Category 6: *The linear delineation (e.g. bordering vegetated wetland, riverfront area, bordering land subject to flooding) of each resource area under an Abbreviated Notice of Resource Area Delineation constitutes a separate activity. The fee associated with each resource area delineation proposed under an Abbreviated Notice of Resource Area Delineation shall be determined by adding the fees for each type of resource area delineation.* The fee for Category 6 is as follows:

Total WPA Filing Fee from ANRAD Wetland Fee Transmittal Form = \$2,000.00

State Share of WPA Filing Fee:  $(\$2,000.00/2) - \$12.50 = \$987.50$

Town Share of WPA Filing Fee:  $(\$2,000.00/2) + \$12.50 = \$1,012.50$

### **Checks**

**Check Payable to: Commonwealth of Massachusetts for \$987.50**

**Check Payable to: Town of Ayer for \$1,012.50**

**TOWN OF AYER**

**REQUEST FOR CERTIFIED LIST OF ABUTTERS**

**THE FEE FOR PREPARING THE LIST IS \$25.00**

**Applicant:** Joseph Orzel Name of Firm: Lucas Environmental, LLC  
Address: 500A Washington Street, Quincy, MA 02169  
Contact Phone #: 617.405.4118 (office) / 603.921.2438 (cell)

***Request abutters list for:***

Owner Name: Orion Park, LLC

Property Location: 1 Orion Park Drive

Parcel ID: Map 7, Parcels 5, 7, 36, 37, 38

Date you need the list by: As soon as possible

The Assessors' Office will generate & certify the requested **abutters list**, for the appropriate boards. Please check the appropriate departments.

Planning Board	_____	Ch 40A Sec 11 (300 feet)
“ “	_____	Ch 41 Sec 81T (ann) (applicant & abutters)
Board of Appeals	_____	Ch 40A Sec 11 (300 feet)
Conservation Comm	<u> X </u>	Ch 131 Sec 40 (300 feet)
Select Board	_____	Ch 138 Sec 12, 15A (abutters & 500 ft if Within school, church or hosp)
Board of Health	_____	Ch 40A Sec 11 (300 feet) (aquifer protection)
Other	_____	

***\*Mailing labels will be provided.***

019/007,0000-0005.0  
 11 0007.0  
 11 0036.0  
 11 0037.0  
 11 0038.0  
 11

RECEIVED

OCT - 4 2022

TOWN OF AYER  
ASSESSORS OFFICE

**300 foot Abutters List Report**  
**Date: 10/6/2022**



**Board of Assessors**  
**Town Hall**  
**1 Main Street**  
**Ayer, MA 01432**

**Tel: (978) 772-8220 ext. 140**  
**Email: assessor@ayer.ma.us**

**Subject Property:**

Parcel	Physical Address	Owner1	Owner2	Mailing Address 1	Mailing Address 2	Community, State ZIP
7-5,7,36-38	1 ORION PARK DRIVE	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432

**Abutters:**

Parcel	Physical Address	Owner1	Owner2	Mailing Address 1	Mailing Address 2	Community, State ZIP
8-8	0 WESTFORD ROAD	NEW ENGLAND POWER CO		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-47	6 LILAC LANE	GOSUKONDA AMITH REDDY	SWAPNA MEKAPOTHULA	6 LILAC LANE		AYER, MA 01432
7-18	0 WESTFORD ROAD (REAR)	SEALED AIR HOLDINGS V, INC	C/O SHANKLIN CORP	100 WESTFORD ROAD		AYER, MA 01432
7-58	23 LOON HILL ROAD	BARRETT GILBERT A III		23 LOON HILL ROAD		AYER, MA 01432
7-49	15 LOON HILL ROAD	KUMAR SUMIT - TE	ERICA TAMLYN	15 LOON HILL ROAD		AYER, MA 01432
8-3	0 WESTFORD ROAD	N E HYDRO TRANS ELECTRIC CO INC		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-5	0 WESTFORD ROAD	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432
7-38	0 WESTFORD ROAD	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432
7-45	3 LILAC LANE	GUDAVALLI RAVINDRA - TE	NIRAJA BURRI	3 LILAC LANE		AYER, MA 01432
8-6	0 WESTFORD ROAD	NEW ENGLAND POWER CO		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-50	0 LOON HILL ROAD	ROBERT M HICKS, INC		124 MAIN STREET		WESTFORD, MA 01886
7-6	100 WESTFORD ROAD	SEALED AIR HOLDINGS V, INC	C/O SEALED AIR CORPORATION	100 WESTFORD ROAD		AYER, MA 01432
8-9	0 WESTFORD ROAD	NEW ENGLAND POWER CO		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-48	4 LILAC LANE	FAMOUS TOD L		4 LILAC LANE		AYER, MA 01432
8-7	81 WESTFORD ROAD	JASR LLC		81 WESTFORD ROAD		AYER, MA 01432
7-56	19 LOON HILL ROAD	REDDIE KHALILAH G -TE	EMMANUEL E NEKONGO	19 LOON HILL ROAD		AYER, MA 01432
7-37	0 WESTFORD ROAD	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432
7-4						
7-57	21 LOON HILL ROAD	STEWART MARK N	MAGRIETA C STEWART	21 LOON HILL ROAD		AYER, MA 01432
7-7	68 WESTFORD ROAD	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432
7-36	0 WESTFORD ROAD	ORION PARK LLC		1 ORION PARK DRIVE		AYER, MA 01432
7-3	0 WESTFORD ROAD (REAR)	MASSACHUSETTS AUDUBON SOCIETY		208 SOUTH GREAT ROAD		LINCOLN, MA 01773
7-59	25 LOON HILL ROAD	GREIS EHAB LABIB		25 LOON HILL ROAD		AYER, MA 01432
8-4	0 WESTFORD ROAD (REAR)	N E HYDRO TRANS ELECTRIC CO INC		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-17	0 WESTFORD ROAD (REAR)	SEALED AIR HOLDINGS V, INC	C/O SHANKLIN CORP	100 WESTFORD ROAD		AYER, MA 01432
7-8	66 WESTFORD ROAD	SAWYER MAY LLC		41 ROBINSON ROAD		LITTLETON, MA 01460
7-COMMON						
8-10	0 WESTFORD ROAD	NEW ENGLAND POWER CO		PROPERTY TAX DEPT 40 SYLVAN ROAD	40 SYLVAN ROAD	WALTHAM, MA 02451
7-46	5 LILAC LANE	JONES JAMES F	NAOMI JONES	5 LILAC LANE		AYER, MA 01432
7-44	1 LILAC LANE	HANNON GEORGE A	JANE M HANNON	1 LILAC LANE		AYER, MA 01432

Certified:

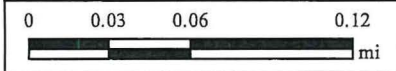
Board of Assessors

*John Kilian*  
*Edward Carlin*  
*Nick P. Lopez*

# MRMapper WebMap



- Parcel Boundaries
- Other Legal Features**
- Easements
- Miscellaneous Features**
- Former Shore
- Future Lot
- Island
- Traffic Island
- Water
- MRPC Communities
- Surrounding Communities
- Interstate Routes**
- Interstate Routes
- US & State Routes**
- US & State Routes
- Other Roadways**
- Other Roadways
- MBTA Commuter Rail Stations
- Active Rail Lines**
- Commuter Rail Line
- Other Active Rail Lines



DISCLAIMER: The Assessor's data were developed for tax valuation purposes only and are not derived from legal surveys or legal descriptions. The Town of Ayer & the MRPC explicitly disclaims any representations and warranties as to the accuracy, timeliness, or completeness of the Assessor's data. The Assessor's data were created from multiple Town, County, State and Federal sources, and such sources could contain errors. The Assessor's data should not be used for any purpose requiring exacting measurement of distance or direction. In no event will the Town of Ayer, the MRPC, or their officers or employees be liable for any losses or damages that might arise from the use of the Assessor's data. The Town of Ayer & the MRPC shall assume no liability for any damages or actions taken against them by the use of this data.

**MRMapper**

**FILING FEE INFORMATION**



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**ANRAD Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**Important:**  
 When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Applicant Information**

1. Location of Project:

Orion Park Drive	Ayer
a. Street Address	b. City/Town
\$987.50	1130
c. Fee amount	d. Check number

2. Applicant:

Frank	Widmayer	Orion Park, LLC
a. First Name	b. Last Name	c. Company
1 Orion Park Drive		
d. Mailing Address		
Ayer	MA	01432
e. City/Town	f. State	g. Zip Code
978.772.6000		
h. Phone Number		

3. Property Owner (if different):

_____	_____	_____
a. First Name	b. Last Name	c. Company
_____		
d. Mailing Address		
_____	_____	_____
e. City/Town	f. State	g. Zip Code
_____		
h. Phone Number		

**B. Fees**

The fee is calculated as follows for each Resource Area Delineation included in the ANRAD (check applicable project type). The maximum fee for each ANRAD, regardless of the number of Resource Area Delineations, is \$200 activities associated with a single-family house and \$2,000 for any other activity.

Bordering Vegetated Wetland Delineation Fee:

1. <input type="checkbox"/>	single family house project	_____	x \$2.00 =	_____
		a. feet of BVW		b. Fee for BVW
2. <input checked="" type="checkbox"/>	all other projects	971	\$1,942.00	\$1,942.00
		a. feet of BVW	x \$2.00 =	b. Fee for BVW

Other Resource Area (e.g., bank, riverfront area, etc.):

3. <input type="checkbox"/>	single family house project	_____	x \$2.00 =	_____
		a. linear feet		b. Fee
4. <input checked="" type="checkbox"/>	all other projects	368	\$736.00	\$736.00
		a. linear feet	x \$2.00 =	b. Fee

Total Fee for all Resource Areas: \$2,000.00 (maximum)  
 Fee

State share of filing fee: \$987.50  
 5. 1/2 of total fee **less** \$12.50

City/Town share of filing fee: \$1,012.50  
 6. 1/2 of total fee **plus** \$12.50

**Online users:** check box if fee exempt.





**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**ANRAD Wetland Fee Transmittal Form**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

---

### **C. Submittal Requirements**

- a.) Send a copy of this form, with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts, to:

Department of Environmental Protection  
Box 4062  
Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Abbreviated Notice of Resource Area Delineation; a **copy** of this form; and the city/town fee payment.
- c.) **To DEP Regional Office:** Send one copy of the Abbreviated Notice of Resource Area Delineation (and any additional documentation required as part of a Simplified Review Buffer Zone Project); a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

**CHESSENGINEERING, LLC**

229 WASHINGTON ST  
UNIT 1  
MALDEN, MA 02148

1129

53-9182/2113  
38

DATE 11/4/22

PAY  
TO THE  
ORDER OF

Town of Ayer

\$ 1012.50

One Thousand and Twelve and 50/100

DOLLARS



Security  
Features  
Details on  
Back.

**DCU** Digital Federal  
Credit Union  
www.dcu.org

FOR ANRAD filing - 273-Ayer

*[Signature]*

MP

**CHESSENGINEERING, LLC**

229 WASHINGTON ST  
UNIT 1  
MALDEN, MA 02148

1130

53-9182/2113  
38

DATE 11/4/22

PAY  
TO THE  
ORDER OF

Commonwealth of Massachusetts

\$ 987.50

Nine Hundred and Eighty-seven and 50/100

DOLLARS



Security  
Features  
Details on  
Back.

**DCU** Digital Federal  
Credit Union  
www.dcu.org

FOR ANRAD filing - 273-Ayer

*[Signature]*

MP



## **APPENDIX D**

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# **WETLAND DELINEATION FIELD DATA FORMS**



## WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-22

Transect Number: WET-1

Applicant: Orion Park, LLC Prepared by: Lucas Environmental, LLC Project Location: Orion Park Drive, Ayer, MA

- Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- Method other than dominance test used (attach additional information)

### SECTION I. VEGETATION

Date of Delineation: July 15, 2022

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
<b><u>Tree</u></b>				
None				
<b><u>Saplings</u></b>				
None				
<b><u>Shrubs</u></b>				
Highbush blueberry ( <i>Vaccinium corymbosum</i> )	20.5	49.4%	YES	FACW*
Black cherry ( <i>Prunus serotina</i> )	10.5	25.3%	YES	FACU
White pine ( <i>Pinus strobus</i> )	10.5	25.3%	YES	FACU
<b><u>Herbaceous</u></b>				
Silvery false spleenwort ( <i>Deparia acrostichoides</i> )	38.0	44.2%	YES	FAC*
Bristly dewberry ( <i>Rubus hispidus</i> )	10.5	12.2%	YES	FACW*
Marsh blue violet ( <i>Viola cucullate</i> )	10.5	12.2%	YES	OBL*
Cinnamon fern ( <i>Osmunda cinnamomea</i> )	10.5	12.2%	YES	FACW*
Canada mayflower ( <i>Maianthemum canadense</i> )	10.5	12.2%	YES	FACU
Poison ivy ( <i>Toxicodendron radicans</i> )	3.0	3.5%	NO	FAC*
Glossy buckthorn ( <i>Frangula alnus</i> )	3.0	3.5%	NO	FAC*
<b><u>Vines</u></b>				
None				

\* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

**Vegetation conclusion:**

**Number of dominant wetland indicator plants:      5                      Number of dominant non-wetland indicator plants:      3**

**Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants:      YES       NO**



## WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-22

Transect Number: WET-1

### SECTION II. INDICATORS OF HYDROLOGY

#### Hydric Soil Interpretation

##### 1. Soil Survey

Is there a published soil survey for this site?    YES     NO

Title/Date: **Custom Soil Resource Report for Middlesex County, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online October 6, 2022**

##### Map Number/Soil Type Mapped:

- 51A – Swansea muck, 0-1% slopes
- 103C – Charlton-Hollis-Rock outcrop, 8-15% slopes
- 104D – Hollis-Rock outcrop, 15-25% slopes
- 262B – Quonset sandy loam, 3-8% slopes
- 424B – Canton fine sandy loam, 3-8% slopes
- 602 – Urban land

Hydric Soil Inclusions: YES

**Freetown, Scarborough, Whitman, Ridgebury**

Are field observations consistent with soil survey?    YES     NO

Remarks:

##### 2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
<b>O</b>	1-0"		
<b>A (gravelly sand)</b>	0-7"	10YR 4/1	10YR 5/1 10YR 4/6
<b>R (refusal)</b>			

Remarks: Sulfur smell in A horizon

##### 3. Other:

Conclusion: Is soil hydric?    YES     NO

#### Other Indicators of Hydrology:

- Site inundated: \_\_\_\_\_
- Depth to free water in observation hole: \_\_\_\_\_
- Depth to soil saturation in observation hole: **At surface**
- Water marks: \_\_\_\_\_
- Drift lines: \_\_\_\_\_
- Sediment deposits: \_\_\_\_\_
- Drainage patterns in BVW: \_\_\_\_\_
- Oxidized rhizospheres: \_\_\_\_\_
- Water-stained leaves: \_\_\_\_\_
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): \_\_\_\_\_
- Other: **Buttressed tree roots**

Vegetation and Hydrology Conclusion	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydric soils present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Sample location is in BVW</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-22

Transect Number: UPL-1

Applicant: Calare Properties Prepared by: Lucas Environmental, LLC Project Location: 71 Bishop Street, Framingham, MA

- Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- Method other than dominance test used (attach additional information)

### SECTION I. VEGETATION

Date of Delineation: July 15, 2022

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
<b><u>Tree</u></b>				
Black birch ( <i>Betula lenta</i> )	68.0	62.4%	YES	FACU
Red oak ( <i>Quercus rubra</i> )	20.5	18.8%	NO	FACU
Red maple ( <i>Acer rubrum</i> )	20.5	18.8%	NO	FAC*
<b><u>Saplings</u></b>				
None				
<b><u>Shrubs</u></b>				
Black cherry ( <i>Prunus serotina</i> )	10.5	50.0%	YES	FACU
American chestnut ( <i>Castanea dentata</i> )	10.5	50.0%	YES	UPL
<b><u>Herbaceous</u></b>				
Eastern hayscented fern ( <i>Dennstaedtia punctilobula</i> )	38.0	41.1%	YES	UPL
Canada mayflower ( <i>Maianthemum canadense</i> )	20.5	22.2%	YES	FACU
Whorled wood aster ( <i>Oclemena acuminata</i> )	20.5	22.2%	YES	FACU
Wild sarsaparilla ( <i>Aralia nudicaulis</i> )	10.5	11.4%	NO	FACU
Highbush blueberry ( <i>Vaccinium corymbosum</i> )	3.0	3.2%	NO	FACW*
<b><u>Vines</u></b>				
None				

\* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

**Vegetation conclusion:**

Number of dominant wetland indicator plants: **0**                      Number of dominant non-wetland indicator plants: **6**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants:    YES                       NO



# WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-22

Transect Number: UPL-1

## SECTION II. INDICATORS OF HYDROLOGY

### Hydric Soil Interpretation

#### 1. Soil Survey

Is there a published soil survey for this site? YES  NO

Title/Date: **Custom Soil Resource Report for Middlesex County, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online October 6, 2022**

#### Map Number/Soil Type Mapped:

- 51A – Swansea muck, 0-1% slopes
- 103C – Charlton-Hollis-Rock outcrop, 8-15% slopes
- 104D – Hollis-Rock outcrop, 15-25% slopes
- 262B – Quonset sandy loam, 3-8% slopes
- 424B – Canton fine sandy loam, 3-8% slopes
- 602 – Urban land

Hydric Soil Inclusions: YES

**Freetown, Scarborough, Whitman, Ridgebury**

Are field observations consistent with soil survey? YES  NO

Remarks:

#### 2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O (leaf litter)	2-0"		
A (fine sandy loam)	0-3"	10YR 3/3	
B (fine sand)	3-12"	10YR 6/6	
R (refusal)			

Remarks:

#### 3. Other:

Conclusion: Is soil hydric? YES  NO

### Other Indicators of Hydrology:

- Site inundated: \_\_\_\_\_
- Depth to free water in observation hole: \_\_\_\_\_
- Depth to soil saturation in observation hole: \_\_\_\_\_
- Water marks: \_\_\_\_\_
- Drift lines: \_\_\_\_\_
- Sediment deposits: \_\_\_\_\_
- Drainage patterns in BVW: \_\_\_\_\_
- Oxidized rhizospheres: \_\_\_\_\_
- Water-stained leaves: \_\_\_\_\_
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): \_\_\_\_\_
- Other: \_\_\_\_\_

Vegetation and Hydrology Conclusion	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydric soils present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Sample location is in BVW</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**ILSF CALCULATIONS**





## CHESS Engineering, LLC

October 25, 2022

Ayer Conservation Commission  
Town of Ayer  
1 Main Street Ayer, MA 01432  
Ayer, MA 01432



RE: Orion Park Drive – ANRAD Filing – Isolated Area Subject To Flooding

Members of the Ayer Conservation Commission:


On behalf of Orion Park LLC (owner and applicant) and in association with Lucas Environmental LLC, CHESS Engineering is pleased to provide this additional documentation in support of the ANRAD filing at Orion Park Drive. The purpose of this document is to provide engineering calculations as to the probable extent of the water identified as the Isolated Land Subject to Flooding in compliance with the Wetland Protections Act Regulations. Please find attached additional site plans and calculations in support of this report.

An Isolated Vegetated Wetlands were delineated by Lucas Environmental on July 15, 2022 and identified on the plan by CHESS. This area is a small isolated depression on the property that meets the definition of Isolated Land Subject to Flooding [ILSF] of the Wetland Protection Act:

*10.57(2)(b)1. Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches*

Per section 10.57(2)(b)3 regarding the boundary of the ILSF:

*The applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said water. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the Isolated Land Subject to Flooding and shall be further based upon the assumption that there is no infiltration of said run-off into the soil within the Isolated Land Subject to Flooding.*



Based on our calculations of the 100-year storm and the design criteria set forth by the 310 CMR, we estimate the elevation of the 100-year flood to be approximately 263.4 feet located near the Isolated Vegetated Wetland as shown on the attached site plan. Calculations provided in the attachments support this estimate.

Sincerely,



Paul Campbell, PE, PLS

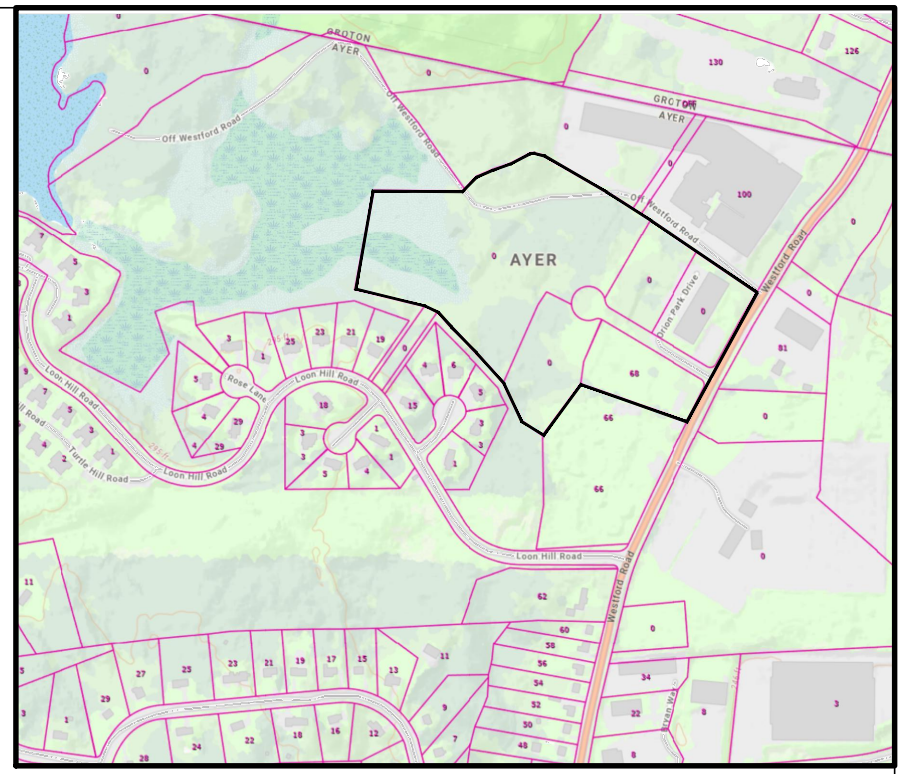
Principal

Attachments:

- Site Plan titled “Isolated Flood Zone” dated October 25, 2022
- Soil Map & Soil Documents
- Stormwater Calculations
- Flood zone estimate calculation

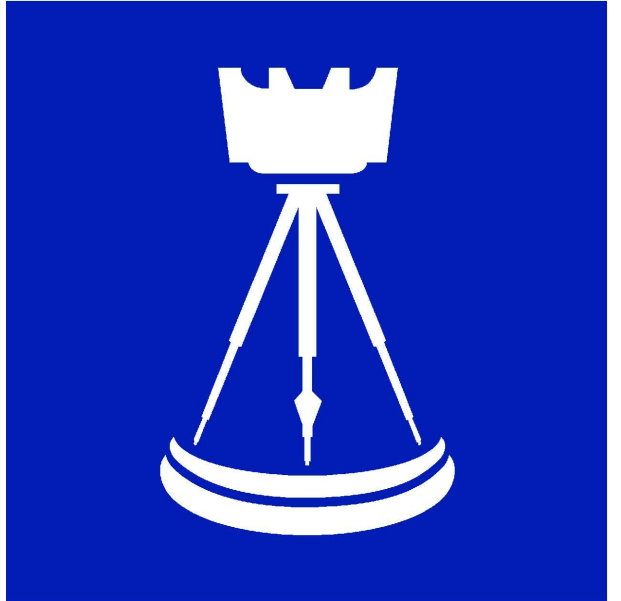
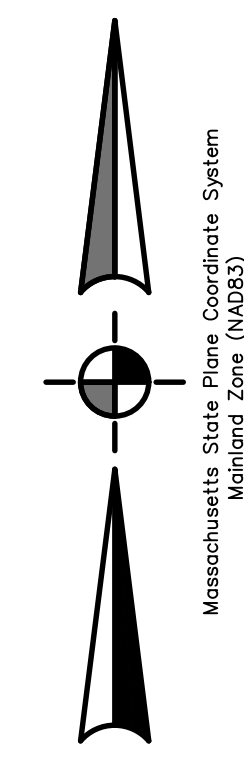
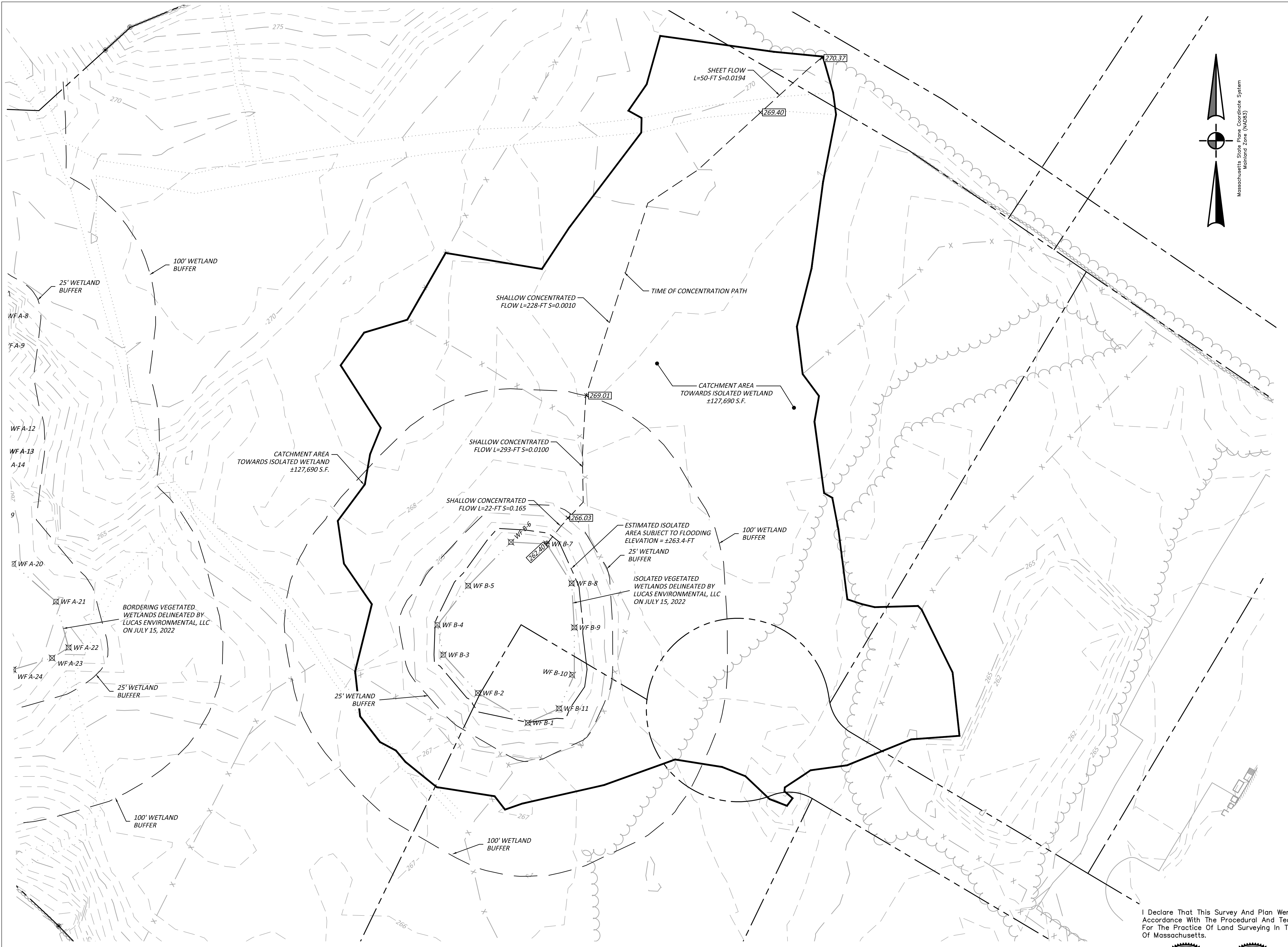


**Site Plan**  
**Isolated Flood Zone**



Locus

**Owner Of Record:**  
 Orion Park, LLC  
 1 Orion Park Drive  
 Ayer, Massachusetts 01432  
 Deed Book 48659 Page 64 & Book 48659 Page 99  
 PID: Map 7 Parcels 5, 7, 36, 37, & 38  
 Plan: 1485 of 1957, 894 of 2001



**CHESSE**  
ENGINEERING

PO Box 9480  
 Lowell, MA 01853  
 Phone (617) 982-3250  
 www.chessengineeringne.com

**Isolated Flood Zone**

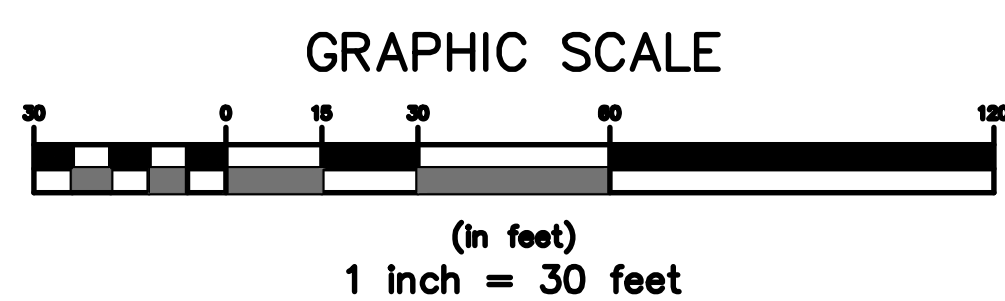
Prepared For  
**Orion Park, LLC**  
 Orion Park Drive  
 Ayer, Massachusetts 01432  
 (Middlesex County)

I Declare That This Survey And Plan Were Prepared In Accordance With The Procedural And Technical Standards For The Practice Of Land Surveying In The Commonwealth Of Massachusetts.



Paul Campbell

Paul Campbell, PLS #52781 PE #49236 Date: 11/4/2022



The Location Of All Underground Utilities Shown Are Approximate And Are Based Upon A Field Survey And Compilation Of Plans Of Record. Chess Engineering, LLC Does Not Warranty The Location Of All Utilities Depicted. Only Record Information Provided By The Respective Utility Owner And Independently Verified By Chess Engineering, LLC Is Shown Hereon. The Contractor, Engineer, Or Architect Prior To Commencement Of Construction Or Design, Shall Verify The Location Of All Utilities And Contact Dig Safe At 1-888-344-7233.

No.	Revision	Date	App.
Designed by:	Drawn by:	PVC	Checked by:
Scale:	1"=60'	Date:	Oct 25, 2022

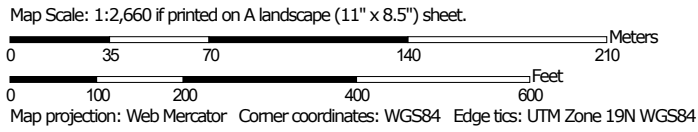


# Soil Map & Documents

Soil Map—Middlesex County, Massachusetts



Soil Map may not be valid at this scale.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts  
 Survey Area Data: Version 22, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	4.2	11.3%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	3.0	7.9%
104C	Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes	2.5	6.8%
104D	Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes	3.3	8.7%
262B	Quonset sandy loam, 3 to 8 percent slopes	18.8	50.2%
424B	Canton fine sandy loam, 3 to 8 percent slopes, extremely bouldery	0.0	0.0%
602	Urban land	5.7	15.1%
<b>Totals for Area of Interest</b>		<b>37.4</b>	<b>100.0%</b>



## Middlesex County, Massachusetts

### 262B—Quonset sandy loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 991c

*Elevation:* 0 to 2,100 feet

*Mean annual precipitation:* 45 to 54 inches

*Mean annual air temperature:* 43 to 54 degrees F

*Frost-free period:* 145 to 240 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Quonset and similar soils:* 80 percent

*Minor components:* 20 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Quonset

##### Setting

*Landform:* Terraces, kames, eskers

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Nose slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Loose sandy glaciofluvial deposits derived from phyllite

##### Typical profile

*H1 - 0 to 7 inches:* sandy loam

*H2 - 7 to 18 inches:* channery loamy sand

*H3 - 18 to 28 inches:* very channery loamy sand

*H4 - 28 to 65 inches:* stratified very channery coarse sand to very channery sand

##### Properties and qualities

*Slope:* 3 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Excessively drained

*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (2.00 to 20.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Very low (about 2.8 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3s

*Hydrologic Soil Group:* A

*Ecological site:* F144AY022MA - Dry Outwash

*Hydric soil rating:* No

### **Minor Components**

#### **Sudbury**

*Percent of map unit:* 10 percent

*Landform:* Plains, terraces

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Tread, dip

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* No

#### **Canton**

*Percent of map unit:* 8 percent

*Landform:* Hills

*Landform position (two-dimensional):* Backslope, toeslope

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### **Unnamed**

*Percent of map unit:* 2 percent

## **Data Source Information**

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 22, Sep 9, 2022



# Stormwater Calculations

# Isolated Land Subject To Flooding

Type III 24-hr 100-year Rainfall=7.55"

Prepared by CHESS Engineering, LLC

Printed 10/25/2022

HydroCAD@10.20-2d s/n 10522 ©2021 HydroCAD Software Solutions LLC

Page 1

## Summary for Subcatchment 1S: Isolated Flood Area

Runoff = 0.18 cfs @ 13.21 hrs, Volume= 3,113 cf, Depth> 0.29"

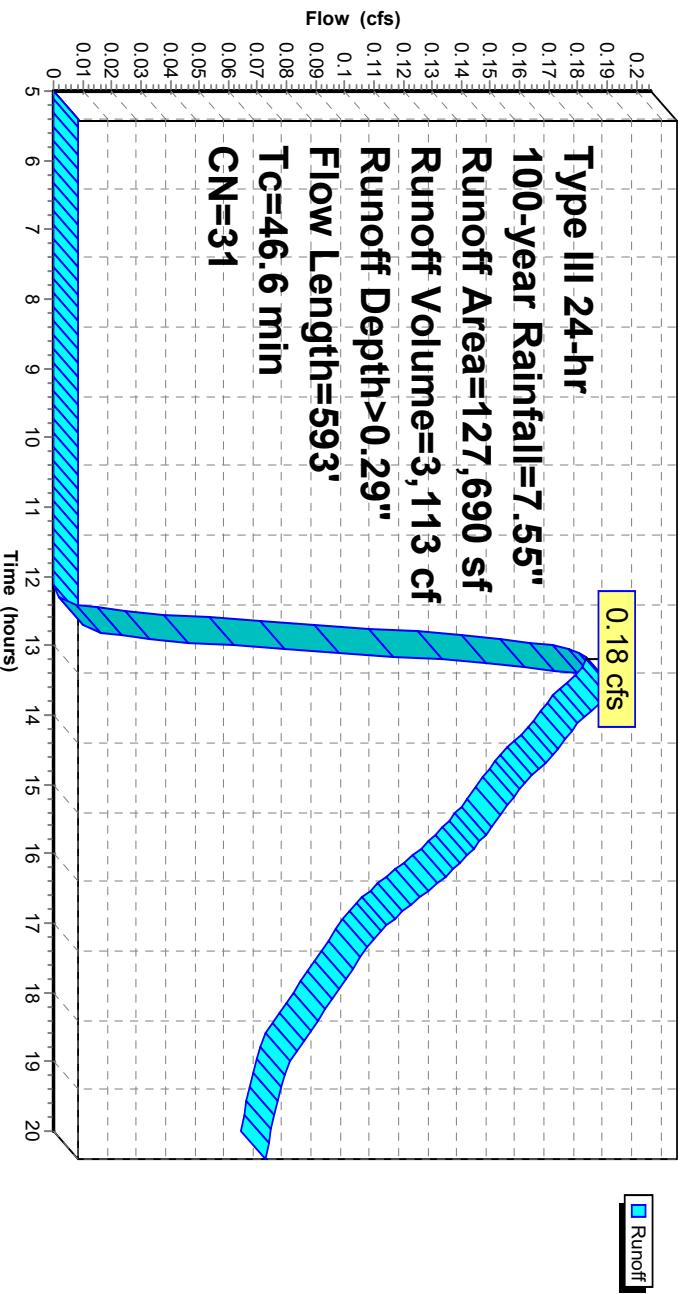
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=7.55"

Area (sf)	CN	Description
12,157	39	>75% Grass cover, Good, HSG A
115,533	30	Woods, Good, HSG A
127,690	31	Weighted Average
127,690		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0194	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.15"
24.0	228	0.0010	0.16		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
9.8	293	0.0100	0.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.2	22	0.1650	2.03		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
46.6	593	Total			

## Subcatchment 1S: Isolated Flood Area

Hydrograph





## Flood Zone Calculation

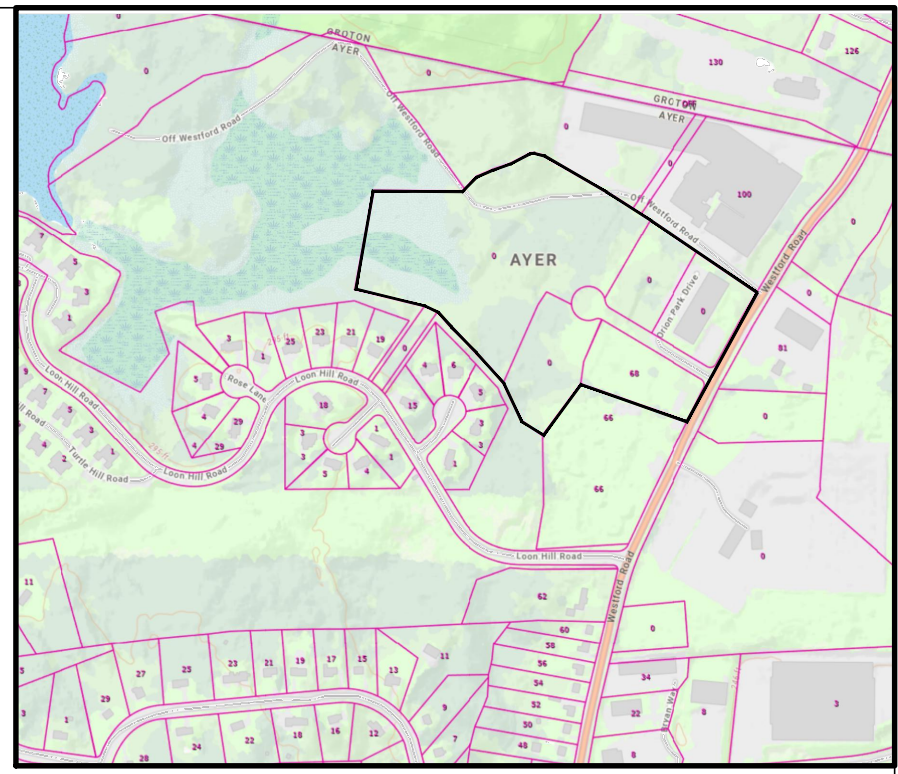
Runoff Volume = 3,113 cubic feet per stormwater calculations

Lowest closed elevation shown on site plan = 263-feet per site elevations near isolated wetland. Assume 263-ft elevation is the bottom of the isolated depression.

Area of isolated depression = 8,325 square feet

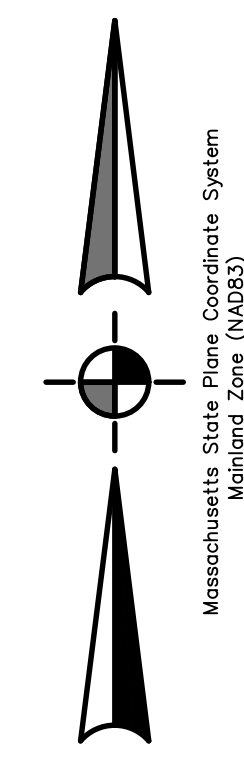
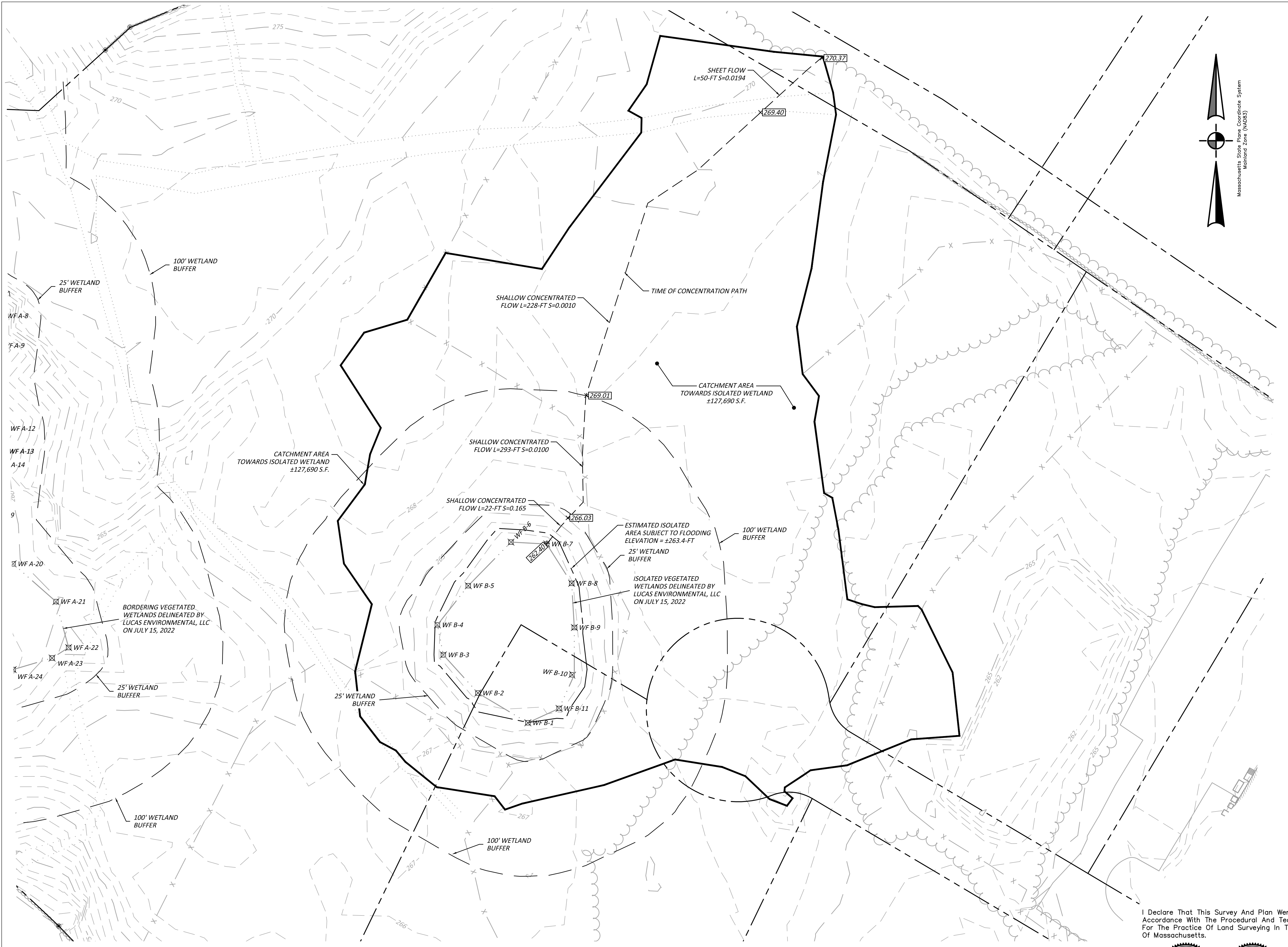
Depth of 100-year flood volume =  $3,113 \text{ cubic feet} / 8325 \text{ square feet} = 0.37 \text{ ft} (\sim 0.4 \text{ ft})$

Approximate elevation of isolated 100-year flood = 263-ft elevation + 0.4 ft = **263.4 feet**

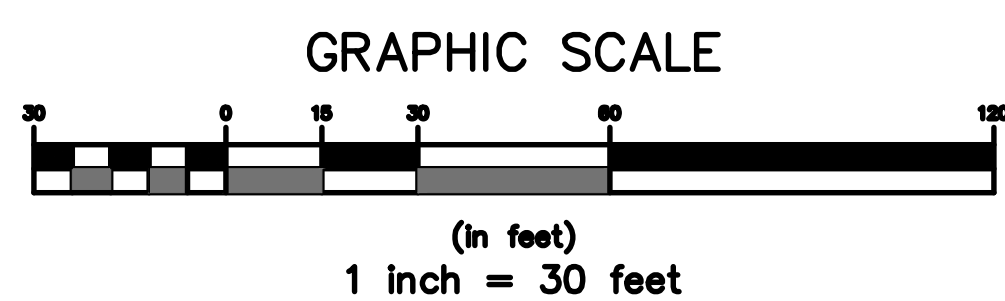


Locus

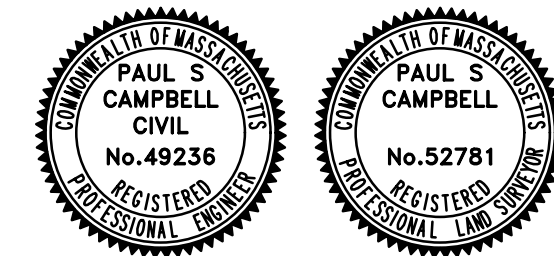
**Owner Of Record:**  
 Orion Park, LLC  
 1 Orion Park Drive  
 Ayer, Massachusetts 01432  
 Deed Book 48659 Page 64 & Book 48659 Page 99  
 PID: Map 7 Parcels 5, 7, 36, 37, & 38  
 Plan: 1485 of 1957, 894 of 2001



The Location Of All Underground Utilities Shown Are Approximate And Are Based Upon A Field Survey And Compilation Of Plans Of Record. Chess Engineering, LLC Does Not Warranty The Location Of All Utilities Depicted. Only Record Information Provided By The Respective Utility Owner And Independently Verified By Chess Engineering, LLC Is Shown Hereon. The Contractor, Engineer, Or Architect Prior To Commencement Of Construction Or Design, Shall Verify The Location Of All Utilities And Contact Dig Safe At 1-888-344-7233.

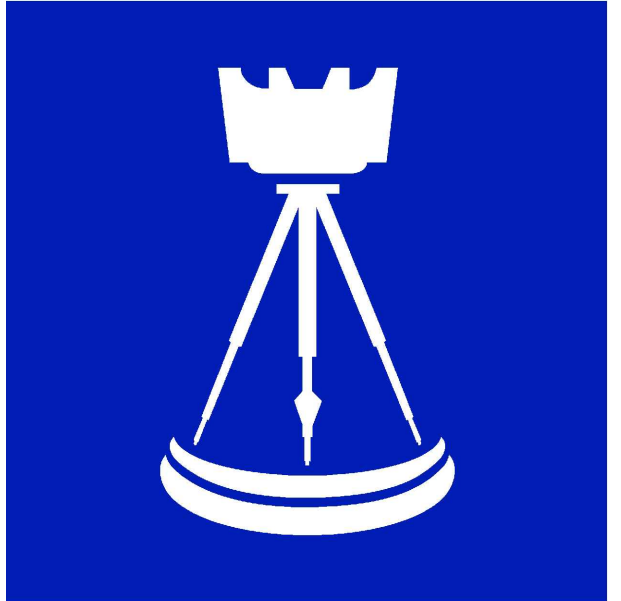


I Declare That This Survey And Plan Were Prepared In Accordance With The Procedural And Technical Standards For The Practice Of Land Surveying In The Commonwealth Of Massachusetts.



Paul Campbell

Paul Campbell, PLS #52781 PE #49236 Date: 11/4/2022



**CHESS**  
ENGINEERING

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 Lowell, MA 01853  
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 www.chessengineeringne.com

**Isolated Flood Zone**

Prepared For  
 Orion Park, LLC  
 Orion Park Drive  
 Ayer, Massachusetts 01432  
 (Middlesex County)

No.	Revision	Date	App.
Designed By:	Drawn by:	PVC	Checked by: PVC
Scale:	1"=60'	Date: Oct 25, 2022	



November 28, 2022

Ayer Conservation Commission  
Ayer Town Hall – 1 Main Street  
Ayer, MA 01432  
Sent via email: [concom@ayer.ma.us](mailto:concom@ayer.ma.us)

## Re: Ayer Ponds – 2022 Year End Report

Dear Commission Members:

It is our pleasure to present a year end summary report regarding the 2022 aquatic management program at Flannagan, Sandy, and Pine Meadow Ponds. The Town's objective of the aquatic management program is to manage invasive species and nuisance waterlilies within the three waterbodies. The purpose of the program is to restore and maintain habitat, public enjoyment, and recreation. These goals were met during the 2022 season through monitoring, reporting, communication, and treatments. Prior to the start of the program, a plan was developed for each individual pond, based on its unique needs.

All permitting, treatment and survey tasks were completed in accordance with the 2022 work plans and Orders of Conditions. The table below provides the specific dates of each task. Below the table, each visit/task performed is described in additional detail.

### Summary Of 2022 Management Activities

Date	Task/Description
March 17, 2022	MA-DEP Licenses issued for Flannagan Pond (WM04-0000472), Sandy Pond (WM04-0000495), Pine Meadow Pond (WM04-0000494).
June 1, 2022	Pre-management surveys were conducted at Flannagan, Sandy, and Pine Meadow Ponds. Initial Sonar applications in Flannagan and Sandy Ponds (based on 2021 post-management surveys).
June 15, 2022	Diquat treatments at Flannagan, Sandy, and Pine Meadow Ponds for the control of variable milfoil and/or curly-leaf pondweed. Sonar booster applications in Flannagan and Sandy Ponds for the control of fanwort.
September 21, 2022	Post-management surveys were conducted at Flannagan and Pine Meadow Ponds. Treatment of waterlilies at Flannagan and Pine Meadow Ponds.
October 12, 2022	Post-management survey at Sandy Pond.



### **Pre-Management Surveys/Initial Sonar Treatments – June 1, 2022**

On June 1<sup>st</sup>, Senior Environmental Scientist, James Lacasse, conducted the pre-treatment surveys at Flannagan Pond, Sandy Pond, and Pine Meadow Pond. Additionally, while on-site, the fanwort areas observed during the 2021 post-treatment survey in Flannagan Pond, and Sandy Pond were treated with the initial dose of Sonar (fluridone). Sonar works best early in the season; therefore, the earlier season approach gave us the best chance of success. The Conservation Commission was notified in advance of this treatment, and the shoreline was also posted with neon posters several days in advance. Conditions during the visit were cloudy with, at times, heavy rain. The survey was intermittently delayed during periods of heavy rains and continued following the rain stopping/slowing.

The pre-treatment survey was conducted to document the distribution and densities of invasive species in all three waterbodies. Visual observation was paired with the use of a throw-rake. Rakes were thrown approximately every 10' throughout the waterbodies (within the littoral zone). This approach was paired with ArcGIS Field Maps and an external GPS to document the locations of the invasive species. Points were input into ArcGIS Field Maps when invasive species were encountered during the rake tosses. The attached maps note our findings, which guided our treatment areas.

#### **Sandy Pond**

Sandy Pond has historically battled several invasive species, including fanwort, variable milfoil, and curly-leaf pondweed. The fanwort was not managed in 2021 due to budget constraints. The survey results from Sandy Pond included invasive species in the typical spots. Three submerged invasive species were documented; fanwort, variable milfoil, and curly-leaf pondweed. This was consistent with the historical records. The northern point contained all three invasive species, with the fanwort being very immature. The western point, at the outlet to Flannagan Pond, contained trace to sparse fanwort. A spot of variable milfoil was also documented on the eastern portion of Sandy Pond. The fanwort spots were treated with Sonar One, time released granular formulation, as planned. Sonar One allows for spot-treatment of fanwort, which is typically difficult with Sonar as it requires roughly 60+ days of contact exposure time at concentrations above 8+ parts per billion. The diquat treatment performed later in June targeted variable milfoil and curly-leaf pondweed. The phragmites stands treated in 2021 appeared primarily dead, with very little regrowth. Phragmites regrowth was planned for later in the season (September). The surface dissolved oxygen collected during the survey was 7.5 mg/l, which is sufficient to support fish and aquatic organisms. The pH was documented at 7.0, which is within a standard range for freshwater, and is considered neutral.

#### **Pine Meadow Pond**

Pine Meadow Pond has historically contained two invasive species, these being variable milfoil and curly-leaf pondweed. The June 1<sup>st</sup> survey was consistent with the 2021 pre-treatment survey. Curly-leaf pondweed was found in the middle to western half of the Pond, with scattered





variable milfoil mixed in. Milfoil was found mixed within the open areas of waterlilies. Fanwort was not found in Pine Meadow Pond, which is consistent with previous years. The waterlily population was notably reduced from the 2021 treatment. This helps promote open water habitat. The surface dissolved oxygen collected during the survey was 7.4 mg/l, which is sufficient to support fish and aquatic organisms. The pH was documented at 6.7, which is within a standard range for freshwater, and is considered fairly neutral. Based on the survey, diquat application was planned for later in the month. Diquat is highly effective at providing seasonal control of both variable milfoil and curly-leaf pondweed.

### Flannagan Pond

During the 2021 season, Sonar (fluridone) was applied throughout Flannagan Pond. While we anticipated drastic reduction in fanwort and milfoil, curly-leaf pondweed reproduces through winter buds called turions. Because the Pond contains a seed bed of curly-leaf pondweed, we anticipated significant regrowth of the curly-leaf. Varying densities of curly-leaf were observed throughout the Pond, primarily the western half of the Pond through most of the middle channel. This ranged from low near the bottom, to surfacing at certain points. Variable milfoil was considerably reduced from 2021 and was only found in two spots, the northwestern corner, and the middle towards the southern shoreline. While the fanwort population regrowth was drastically reduced from the 2021 Sonar treatment effort, both in terms of density and cover, it was still observed in many areas, predominantly the eastern portion of the Pond. It was noted at only trace to sparse densities as we moved towards the middle of the Pond away from the inlet at Sandy Pond. Approaching the eastern basin, where fanwort was more prevalent, densities increased and were surfacing in spots. The eastern basin of Flannagan Pond might have had lesser carry over control of fanwort for a few reasons. This area was subject to much higher flows at the inlet in 2021, especially given the consistent heavy rains throughout the entire treatment season. Additionally, at the request of Conservation, we left a buffer around a swan's nest in this area, where product was intentionally not applied. The surface dissolved oxygen collected during the survey was 8.2 mg/l, which is sufficient to support fish and aquatic organisms. The pH was documented at 6.4, which is within a standard range for freshwater, and is considered fairly neutral. Sonar was applied to the contracted areas near the inlet where it was documented during the 2021 post-treatment survey, however additional areas extended beyond this. We anticipated some control outside of the treated areas in Flannagan Pond. The diquat treatment performed later in June targeted predominantly curly-leaf pondweed and also controlled the small areas of variable milfoil. Unfortunately, diquat does not control fanwort.

### **Diquat Treatment (All Ponds) / Sonar Booster Treatment (Sandy/Flannagan) – June 15, 2022**

#### Sandy Pond

On June 15th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a site visit to Sandy Pond. The visit consisted of performing a survey, collecting basic water quality data, and conducting a treatment. Conditions during the visit were sunny and partly cloudy.

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Within all three target areas, the western shoreline, northwestern cove, and eastern shoreline by the inlet, there was curly-leaf pondweed, variable milfoil, and fanwort observed in sparse to moderate densities. Also noted were the phragmites which were treated in 2021, which had very little regrowth. In addition, there were native plants including waterlilies, watershield, ribbon leaf pondweed, cattails, bladderwort, and snailseed pondweed. This was very much consistent with our recent pre-treatment survey.



*Figure 1 Previously treated phragmites area*



*Figure 2 Collection of Secchi disk data at Sandy Pond*

disappearance, called the Secchi depth, is a measure of the transparency of the water. The Secchi reading was 12ft 2in, which is indicative of excellent water clarity.

While on-site, basic water quality was collected using calibrated meters. The pH was 7.5, which is within a standard range for freshwater and is considered neutral. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen was sufficient to support fish and aquatic organisms. Water clarity was also assessed using a Secchi disk. A Secchi disk is a disk with alternating black and white quadrants. It is lowered into the water of a lake until it can no longer be seen by the observer. This depth of

As planned, and based on the survey, a treatment was conducted for the control of milfoil, fanwort, and curly-leaf pondweed. The liquid herbicide, Tribune (diquat), was applied using a treatment boat equipped with a calibrated sub-surface injection system. This application methodology allows for even coverage within the treatment areas. Additionally, a Sonar "booster" treatment was applied to the small areas of fanwort. Sonar works by maintaining contact exposure time, so the booster treatment helped maintain the desired concentration of Sonar within the treatment areas. The granular Sonar (Sonar One) was applied using a calibrated spreader within the areas containing fanwort. Several days prior to treatment, the shoreline was

posted with neon posters noting the treatment and the affiliated water use restrictions. We also monitored the beach schedule to have minimum interference with the recreational beach.

### Pine Meadow Pond

On June 15th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a site visit to Pine Meadow Pond. The visit consisted of performing a survey, collecting basic water quality data, and conducting a treatment. Conditions during the visit were sunny and partly cloudy.

Upon arrival, a survey was conducted using visual observation. This was conducted to confirm the data that was collected during the pre-treatment survey and to further confirm the timing of the treatment. Throughout the pond there were dense densities of watershield and waterlilies, and in the water column there were sparse densities of ribbon leaf pondweed. In the northern end there were also dense populations of cattails. All target species were noted, which were variable milfoil and curly-leaf pondweed; no fanwort was observed. This was consistent with the pre-treatment survey (please refer to pre-treatment survey map noting locations of invasive variable milfoil and curly leaf pondweed).



*Figure 3 Dense waterlilies and watershield*

While on-site, basic water quality was collected using calibrated meters. The pH was 7.3, which is within a standard range for freshwater and is considered neutral. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen was sufficient to support fish and aquatic organisms. Water clarity was also assessed using a Secchi disk. The Secchi reading was 4ft 4in, which is an indication of about average water clarity.



*Figure 4 Open water area in Pine Meadow Pond*

As planned, and based on the survey, a treatment was conducted for the control of curly-leaf pondweed and milfoil. The liquid herbicide, diquat, was applied using a treatment boat equipped with a calibrated sub-surface injection system. This application methodology allows for even coverage within the treatment areas. Several days prior to the treatment, the shoreline

of the pond was posted with neon posters noting the treatment and affiliated water use restrictions.

### Flannagan Pond

On June 15th, Senior Environmental Scientist, James Lacasse, and Field Assistant, Grace Adams, completed a site visit to Flannagan Pond. The visit consisted of performing a survey, collecting basic water quality data, and conducting a treatment. Conditions during the visit were sunny and partly cloudy.

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Along the majority of the shoreline, as well as the coves of the Pond, there were trace to dense densities of waterlilies. The remainder of the waterlilies were scattered throughout the pond, on the surface, as well as in the water column. The target species, curly-leaf pondweed, fanwort, and variable milfoil were all treated, and ranged from trace to dense densities, scattered throughout the pond (see pre-treatment survey maps). The eastern basin in specific had dense densities of bladderwort, with some of it flowering. The fanwort in the eastern basin was observed in moderate to dense densities, also starting to flower. The curly-leaf had slightly decreased in density since the previous visit, as it is a colder water invasive species. Throughout the patches of waterlilies, there were also numerous floating islands, which is a result of the uprooting of the waterlilies. In addition, there were sparse densities of ribbon leaf



*Figure 5 Dense areas of lilies and watershield in Flannagan Pond*



*Figure 6 Open water areas in Flannagan Pond resulting from 2021 Sonar program*

pondweed, a beneficial native plant. It is nice to see native plants like ribbon leaf starting to recolonize following the 2021 extensive Sonar treatment.

While on-site, basic water quality was collected using calibrated meters. The pH was 7.2, which is within a standard range for freshwater and is considered neutral. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen was sufficient to support fish and aquatic

organisms. Water clarity was also assessed using a Secchi disk. The Secchi reading was 4ft, which is indicative of average water clarity.

As planned, and based on the survey, a treatment was conducted for the control of fanwort, variable milfoil, and curly-leaf pondweed. The diquat will also impact nuisance densities of bladderwort. The liquid herbicide (diquat) was applied using a treatment boat equipped with a calibrated sub-surface injection system, and the granular product (Sonar One) at the inlet area where fanwort was observed during the 2021 post treatment survey was also "bumped." Sonar works much more slowly than the diquat and requires maintaining contact exposure time. This application methodology allows for even coverage within the treatment areas. Prior to treatment, the Ayer Conservation Commission was notified, and neon signs were posted along the shoreline several days in advance. These posters note any affiliated water use restrictions.

### **Post-Mgmt. Surveys/Waterlily Treatment (Flannagan/Pine Meadow) – September 21, 2022**

#### **Pine Meadow Pond**

On September 21st, Senior Environmental Scientist, James Lacasse, completed a site visit to Pine Meadow Pond. The visit consisted of performing a survey, collecting basic water quality data, and conducting a treatment. Conditions during the visit were mostly cloudy and calm.



*Figure 7 Lilies on Pine Meadow Pond (South to North view)*

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Rake tosses were thrown regularly throughout the Pond, and information specific to vegetation species was collected using ArcGIS Field Maps application. The Pond looked great as all target species were controlled. Variable milfoil was documented in the southeastern corner but appeared very unhealthy and was covered in epiphytic algae. Epiphytic algae indicates that the plant is dying/decaying. Variable milfoil was only found in this one spot - no other invasive species were noted, including curly-leaf pondweed which was a target of the initial treatment. Watershield, waterlilies, callitriche, bladderwort, coontail, and duckweed were also documented throughout the survey, all native species. Bladderwort, watershield, and waterlilies were the most prominent species observed. Cattails surround the majority of the shoreline, specifically around the northern, western/northwestern, and eastern shorelines. Waterlilies and watershield were scattered in the southern half of the Pond, and more moderate to dense in the northern half.

While on-site, basic water quality was collected using calibrated meters. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen

was sufficient to support fish and wildlife. Water clarity was also assessed using a Secchi disk. The Secchi reading was 4'10 (to the bottom). This illustrated slightly above average water clarity.

As planned, a treatment was conducted for the control of waterlilies. The liquid herbicide (Rodeo) was applied using a treatment boat equipped with a calibrated pump system via foliar methodology. This application methodology allows for even coverage within the treatment areas. Posters stating the restrictions (no restrictions) were posted around the Pond several days prior to treatment. The focus of the waterlily treatment is by no means to eliminate waterlilies, but to scale them back to a more desirable density/cover. Due to the density and cover, this process will take several years to continually scale them back. Progress has already been made as open-water habitat has been increased through last year's lily treatment.



*Figure 8 Photo showing progress in creation of open-water habitat*

### Flannagan Pond

On September 16th and September 21st, Senior Environmental Scientist, James Lacasse, completed site visits to Flannagan Pond. The visits consisted of performing a survey, collecting basic water quality data, and conducting a treatment. Conditions during the two visits were partly cloudy and calm. Due to an equipment issue on September 16th, the survey was conducted on that date and the treatment was started. The remainder of the treatment was postponed to the 21st. The Commission was notified of this change, and new posters with a new treatment date were posted for the 21st, on the 16th.



*Figure 9 Open water created at Flannagan Pond*

Upon arrival on September 16th, the post-treatment survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps. Rake tosses were regularly thrown throughout the Pond, and GPS points were collected documenting nuisance/invasive vegetation, as well as native vegetation assemblage. Overall, the 2022 aquatic management program worked extremely well, as minimal invasive species were noted during the survey. Open-water was noticeably increased through both the 2022 effort as well as carry over control from the more intensive 2021 Sonar treatment program. The

two invasive species documented included fanwort and variable milfoil, which were found in scattered, trace to sparse densities. Variable milfoil was found in two locations, both as isolated patches. These areas included the northwestern corner and within the eastern basin. Fanwort was found scattered, with the largest area by the launch (middle of the southern shoreline). The majority of the minimal invasive species observed were covered in epiphytic algae, which indicates that the plant is dying/decaying. Other species noted included watershield, bladderwort, and ribbon-leaf pondweed. Bladderwort was documented as moderate to dense as this species was noted throughout the majority of the Pond. Bladderwort was observed growing on the bottom, within the water column, and surfacing. Bladderwort is a native species. Curly-leaf pondweed, another invasive species targeted in Flannagan Pond, was not found during the survey. The water level was much lower than usual. Very shallow depths and dense native bladderwort occasionally made navigating around the Pond difficult.

While on-site, basic water quality was collected using calibrated meters. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen was sufficient to support fish and wildlife. Water clarity was also assessed using a Secchi disk. The Secchi reading was 3 feet, to the bottom. The water clarity was documented as average.

As planned, started on the 16th and finished on the 21st, a treatment was conducted for the control of waterlilies. The liquid herbicide (Rodeo) was paired with a non-ionic surfactant which acts as a sticking agent and increases uptake, was applied using a treatment boat equipped with a pump system via foliar methodology. This application methodology allows for even coverage within the treatment areas. Posters noting any affiliated water-use restrictions were posted several days ahead of each treatment, and the Conservation Commission was also notified in advance of both visits.

### **Post-Management Survey (Sandy Pond) – October 12, 2022**

On October 12th, Senior Environmental Scientist, James Lacasse, completed a site visit to Sandy Pond. The visit consisted of conducting a survey and collecting basic water quality data. Conditions during the visit were sunny and calm. We delayed the survey until previously documented algae bloom had lessened. We did this out of the safety of our staff.

Upon arrival, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Two invasive species were documented during the survey, including variable milfoil and phragmites. Variable milfoil was only found in one location, which was the southeastern



*Figure 10 Phragmites area treated in 2021*



*Figure 11 Dense microscopic algae bloom in windblown areas*

microscopic algae bloom documented throughout the Pond, visible both on the surface and throughout the water column. It was especially dense in wind-blown areas of the Pond. This caused the color of the Pond to appear "green" and resulted in decreasing water clarity/quality. Because a public health advisory was in place, we were unable to treat waterlilies and/or phragmites this season. A special condition within MA-DEP WM04 permits prevents the licensed applicator from treating a pond when an advisory is in place. This treatment was not invoiced to the Town.

corner. The milfoil noted included just a few strands that appeared very unhealthy as they were brown/black in color and covered in epiphytic algae. Epiphytic algae indicates that the plant is dying/decaying. Phragmites were noted in a few locations along the northern shoreline and one location on the southern shoreline. There was minimal regrowth documented in areas treated in 2021. No fanwort was found, as the 2022 treatments targeting milfoil and fanwort proved extremely effective. Other species noted included waterlilies, watershield, bulrush, cattails, and ribbon-leaf pondweed. There was a dense

While on-site, basic water quality was collected using calibrated meters. The water temperature was consistent with other similar waterbodies we manage in the area, and the dissolved oxygen was sufficient to support fish and wildlife. Water clarity was also assessed using a Secchi disk. The Secchi reading was 2'10", which illustrated poor water clarity. This was due to the microscopic algae bloom.

Algae control is not part of the Ayer's management program, and the bloom came on late in the season, so no action was taken to resolve the issue. We take the bloom extremely seriously and have included information pertaining to both proactive and reactive control within the recommendations section below.

### **Temperature / Dissolved Oxygen Readings**

Temperature and dissolved oxygen readings were collected throughout the season at all three Ayer Ponds using a calibrated YSI meter. Dissolved oxygen can be affected by many outside factors, such as: temperature, time of day, and pollution. Fish and other aquatic organisms typically require a minimum of four to five milligrams per liter (mg/l) of oxygen. Healthy water should generally have concentrations of about 6.5-8 mg/L. Readings at the Ayer Ponds showed sufficient dissolved oxygen throughout the season. At no point (during our collections) was the dissolved oxygen in any of the three ponds below a threshold sufficient to support fish and other aquatic organisms.



The amount of dissolved oxygen a pond can hold is largely determined by water temperature. When the water temperature is cooler, it can hold more oxygen. Generally, water cannot hold oxygen at levels that will support fish when above 85 degrees Fahrenheit.

The table below shows the recorded dissolved oxygen and temperature readings for each pond, during each visit.

Date	Flannagan Pond		Sandy Pond		Pine Meadow Pond	
	Surface Temp (°C)	Surface D.O. (mg/l)	Surface Temp (°C)	Surface D.O. (mg/l)	Surface Temp (°C)	Surface D.O. (mg/l)
6/1/2022	22.6	8.2	23.2	7.5	23.4	7.4
6/15/2022	23.1	8.97	26.7	9.62	27.3	7.86
9/21/2022	20.1	7.1	-	-	19.2	7.1
10/12/2022	-	-	17.4	6.7	-	-

## Summary / 2023 Recommendations

### Flannagan Pond

Prior to the 2021 Sonar “reset” performed in Flannagan Pond, dense fanwort had taken over the majority of the Pond. A drastic reduction in fanwort was documented during the 2022 season, leading to much improved conditions. Despite this, we are still battling several invasives including areas where less multi-year fanwort control was achieved. These include higher flow areas, and an area that was avoided in 2021 due to the presence of a swan’s nest. Variable milfoil was also greatly reduced from the 2021 effort. Curly-leaf pondweed is a perennial plant that reproduces through turions. The turions typically germinate in the fall and the curly leaf pondweed plants typically grow extensively shortly after ice-out in the Spring. Given that CLP turions can survive at least five years of dormancy in ponds, annual control is recommended to gain extensive control over time.



Figure 12 Flannagan Pond

Based on this information, the continued maintenance approach to invasive species control in Flannagan Pond is recommended. This includes use of diquat herbicide for the control of variable milfoil and curly-leaf pondweed regrowth. Unfortunately, diquat is not effective on fanwort so other options must be considered. There are only two MA/EPA approved herbicides which have efficacy on the invasive fanwort. The first is flumioxazin, commonly called by the brand name Clipper. Clipper is a contact herbicide, much like diquat. It provides seasonal fanwort control and must be repeated annually. Unfortunately, Clipper is not approved in the Ayer Ponds which only



leaves one herbicide option. Sonar, which was used extensively in Flannagan Pond in 2021 and has been used in other years, including 2022, to spot-manage fanwort growth, continues to be the recommended option for fanwort control. Sonar requires building and maintaining a concentration of the active ingredient (fluridone). This makes spot-treatment with Sonar difficult. To combat this, we recommend continuing with use of Sonar One, the time released granular formulation. In addition to this, an initial treatment and a booster treatment should be applied. One major change which was made when Water & Wetland, LLC took over management is the timing of treatments. The contact herbicide treatments using diquat were applied earlier in the season in mid-June versus after July 1. This approach helps minimize biomass die-off and is generally best practice. Perhaps more importantly, Sonar is best applied early in the season as well. Historically, Sonar was applied to Flannagan and Sandy Ponds in July and August. While May is optimal, from a cost perspective, pairing the initial Sonar treatment with the pre-management surveys in very early June is still beneficial. This allows for the booster application to be completed in mid-June. This timing was extremely effective in 2022 and should be continued in 2023 and beyond. In order to accomplish this, fanwort management areas should be based on the prior season's maps. Management of milfoil and curly-leaf pondweed can be based on the current year's pre-management survey.

Excessive waterlily growth has taken over much of Flannagan Pond, which is generally what most abutters ask us about when we are posting/treating. Waterlilies are a native species which provide valuable habitat and cover. Dense waterlily growth such as in Flannagan Pond can limit oxygen transfer and biodiversity. The waterlilies have been greatly reduced over the years, but there is still work to be done. Reduction was experienced from 2021 to 2022 and we anticipate further reduction in waterlily regrowth into 2023 (from the 2022 treatment). A similar treatment should be conducted during the 2023 season. We are able to save on costs by pairing this treatment with the post-management survey. Waterlily treatment is most effective late in the season, so this timing works extremely well. The goal will never be to eliminate lilies, but rather to scale them back to a more desirable and beneficial density and cover.

#### Pine Meadow Pond

Conditions in Pine Meadow Pond in 2022 were consistent with previous years. Luckily, fanwort has not been introduced into Pine Meadow Pond. If it does find its way into the Pond, ideally it will be caught early through the regular surveys being conducted. Water & Wetland staff is diligent about cleaning and inspecting our boats in between each pond we visit to help limit the spread of invasives. The Town may want to consider signage at any access points to the ponds, noting the importance of cleaning and inspecting boats. Several other ponds in the area contain invasive water chestnut which was not found in any of the three Ayer Ponds which Water & Wetland manages. Signage and best management practices will help keep this horrible invasive species out of Pine Meadow Pond, Sandy Pond, and Flannagan Pond.

Aside from keeping any new invasive species out of Pine Meadow Pond, continued management of the to invasive species, curly-leaf pondweed and variable milfoil, is necessary. Diquat herbicide has been extremely effective at providing season long control of both target invasive species in Pine Meadow Pond. Unfortunately, diquat is a contact herbicide which only provides season long control of these invasive species. For this reason, diquat application should be repeated annually, based on the pre-treatment survey. The benefits to diquat are that it is fast acting, which makes it great for spot treatment. It is also much less costly verses other herbicides such as Sonar. We also considered other herbicide options, such as Procellacor, which is a newer herbicide that is widely considered the ultimate milfoil control tool. One of the benefits to Procellacor is that it is highly selective to milfoil. In the case of Pine Meadow Pond, a second target invasive species is curly-leaf pondweed, which will not be controlled through Procellacor treatment. Based on this we recommend continuing with diquat during the 2023 season for the control of the two target invasive species.

Similar to Flannagan Pond, excessive waterlily cover and density has taken over much of Pine Meadow Pond, especially in the northern portion. Since Water & Wetland took over management, there has been a drastic increase in open-water habitat, but waterlily treatment is still necessary in upcoming years. Continuing to pair this treatment with the post-management survey in September will help reduce costs.

### Sandy Pond



*Figure 13 Sandy Pond*

Sandy Pond has historically battled three invasive species: fanwort, variable milfoil, and curly-leaf pondweed. Luckily, Sandy Pond is deep, and these invasive species have stayed confined to only a few small areas. This allows for spot-management of curly-leaf pondweed and variable milfoil with diquat, and management of fanwort with Sonar One. This program should continue in 2023. It is important to ensure that treatments are timely. We recommend continuing with the initial Sonar treatment during the pre-management survey, with treatment areas to be based on 2021 maps. Additionally, the Sonar booster application can be applied with the mid-June diquat application. Sandy Pond has less issues with waterlilies than Flannagan Pond and Pine Meadow Pond, but waterlilies should continue to be monitored and scaled back as necessary. The several areas of invasive phragmites around the shoreline of Sandy Pond should also be monitored and treated as necessary as well. Drastic reduction in phragmites regrowth was achieved from the 2021 treatment, but they were unable to be treated in 2022 due to the public health advisory.



Sandy Pond was shut down late in the season due to visual signs of a possibly harmful algae bloom. Water & Wetland and the Town takes this very seriously, and we have several recommendations for future algae control at not only Sandy Pond, but also Flannagan and Pine Meadow.

### All Ponds

To our knowledge, the Ayer Ponds do not have a history of frequent cyanobacteria blooms. Cyanobacteria have the ability to reproduce rapidly, as was the case with Sandy Pond in the late Summer. Weather patterns can drastically impact cyanobacteria, the 2022 season was extremely hot and dry, which may have helped exacerbate the issue in Sandy Pond. Despite this anomaly, it's extremely important to have plans in place to manage potentially harmful algae blooms, and to further understand the causes. By understanding the causes of frequent blooms, programs designed to target source nutrients can be implemented. Unfortunately, the MA DEP WM04 Permit we obtained, which allows us to treat, restricts us from treating algae when a public health advisory is in place. This limited any possible action in 2022. Per MA DPH, a public health advisory is implemented when blue-green cell counts exceed 70,000 cells/ml. The Town of Ayer was extremely proactive in shutting down Sandy Pond upon the visual observations of the dense bloom.

Phosphorus is the limiting nutrient typically fueling potentially harmful algae blooms. Water quality results for Sandy Pond and the other Ayer Ponds are scarce at best, but we can assume the phosphorus levels, specifically in Sandy Pond, are likely elevated. At a minimum in 2023, baseline nutrient analysis should be collected. This will help to make phosphorus mitigation decisions in the future. More extensive sampling could also be completed as budget allows, this would include multiple locations, depths, and rounds of sampling. Exploration of alum use can be explored, but we'd recommend bringing in a consultant such as ESS Group/TRC Environmental, who specializes in dosing aluminum treatments. Alum is commonly used in ponds, lakes and drinking water reservoirs to remove phosphorus through precipitation, forming a heavier than water particulate known as floc. This floc settles to the bottom of the waterbody to create a barrier that slows sediment phosphorus release. Alum dosing can vary greatly. A low dose treatment can be used to strip phosphorus from the water column but may need to be repeated annually or more. Higher doses may be needed to inactivate sediment phosphorus reserves. Higher doses also typically require buffering with sodium aluminate. In either case, dosing is the key to success, and a specialist such as ESS Group can assist with intense sediment sampling and dosing. Given the need for this extensive testing. We recommend keeping alum in mind for the long-term future of Sandy Pond but are not recommending its' use for 2023. We also believe alum may have been applied to Sandy Pond many years ago, but do not have any data in regard to this.

Even prior to having this data, some proactive measures could be taken to address phosphorus. One possible low-cost addition to the 2023 program would be the possible use of BioChar socks



at the inlets. BioChar, a product similar to activated charcoal, is a natural solution to water filtration. This specially produced, highly absorbent product is placed in porous socks and has the ability to filter nutrients such as phosphorus as water passes through. This of course assumes that the phosphorus within the Pond and entering the Pond is elevated. It makes most sense to conduct water quality testing during the 2023 season to further home in on appropriate approaches to phosphorus mitigation, if applicable. SePRO (manufacturer of many aquatic management technologies) also has new phosphorus mitigation technologies being released in 2023 that may be applicable to Sandy Pond (again, without having proper water quality data in hand), these three technologies can be deployed alone or integrated to inactivate phosphorus from inflows/outflows, water column and sediment. One in particular is called EutroSORB and may be an alternative to the BioChar socks. This proprietary product is similar to BioChar in that it provides filtration, however SePRO has designed the product specifically to target phosphorus. They tout as much as 15x-20x more phosphorus removal than BioChar.

As is always the case, we recommend using best management practices. These practices include not using fertilizers on lawns/turf or using non-phosphorous fertilizers when not fertilizing is not an option. Encouraging beneficial buffers will also help limit nutrient input into the Pond. This can be as simple as not mowing directly up to the shoreline.

Ultimately, based on the above dialogue and analysis, the immediate recommendation for either just Sandy Pond, or all three Ayer Ponds would be collection of a baseline water quality sample which includes several basic parameters as well as a suite of nutrients. This may help us “predict” blooms. Aside from this, we are always available to either collect on-call samples for algae ID and enumeration, or if budget allows, set a regular program to monitor algae species and counts. By using this data, we can determine the need for an algaecide treatment prior to conditions shutting down the waterbody. The best approach to actual management in 2023 is on-call algaecide applications with copper-sulfate if needed based on either visual monitoring, or sampling. Copper sulfate is frequently used in drinking water reservoirs, so it is extremely safe. By applying copper sulfate at the early stages of a bloom, we can control it prior to it reaching a level which would warrant a pond shut down. Copper sulfate applications are limited to ½ of the waterbody at a time per the product label. We have provided copper sulfate application costs for all three ponds within our cost table. It is recommended to budget a small amount towards copper sulfate application if applications are necessary during the 2023 season.

### Conclusion

Much was accomplished in 2022 as we have continued to control invasive species and nuisance waterlilies within the Ayer Ponds. An algae bloom led to a late season shutdown of Sandy Pond, but several steps can be taken in future years to either proactively limit the chances of this or controlling it prior to a shutdown. As described above, there’s still work to be done. For 2023, we recommend the work described above, paired with the same approach to pre-treatment and post-treatment surveys.



We hope that this year-end report has provided the Commission with valuable information regarding the details of the work performed at Ayer Ponds during the 2022 season. All work performed was consistent with the Orders of Conditions, and the scope of services provided to the Commission. We look forward to working closely with Ayer Conservation Commission to continue to improve the health of the Ayer 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](mailto:james@waterandwetland.com)  
[www.waterandwetland.com](http://www.waterandwetland.com)

#### **Attachments Include**

- **Notarized Control Statement**
- **Pre-Treatment Invasive Species Maps**
- **Post-Treatment Maps Invasive Species Maps**
- **Post-Treatment Native Plant Assemblage Maps**

**\*Please note that the invasive species maps note locations where plants were found (by species). As noted within the above dialogue, the invasive species documented during the post-treatment surveys consisted of a small number of plants in each location, most of which was extremely unhealthy and covered in epiphytic algae.**

November 29, 2022

Ayer Conservation Commission  
c/o Office of the Board of Selectmen  
Town Hall, One Main Street  
Ayer, MA 01432


Dear Ms. Hampson and Commission Members:

I, Colin Gosselin, certify that 90% minimum control of fanwort, milfoil, and curly-leaf pondweed was achieved during the 2022 season. Phragmites treatment was not completed at Sandy Pond during the 2022 season due to the public health advisory, this work was not invoiced. Given this, no statement pertaining to 2022 phragmites control can be provided. Based on surveys, it appears that significant control was gained in 2021 (>95%) and has carried over reduction into 2022.

Sincerely,

  
\_\_\_\_\_  
Colin Gosselin – Water & Wetland, LLC

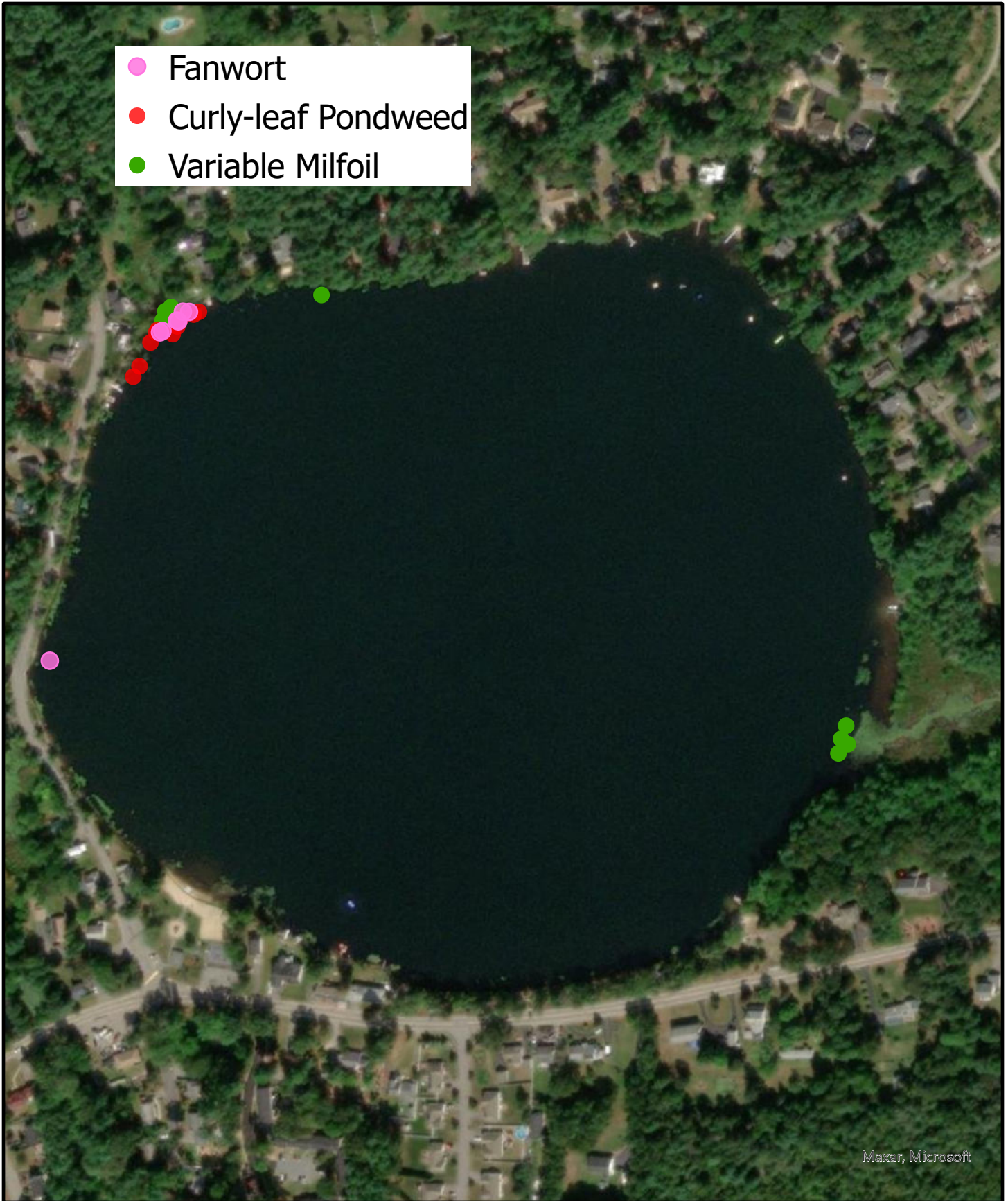
11/29/22  
\_\_\_\_\_  
Date

I,  (NOTARY) as a notary public certify that I witnessed the signature of the aforementioned signatory above and I verified the individual's identity on this date:  
November 29, 2022

My commission expires on:

AFFIX NOTARY SEAL

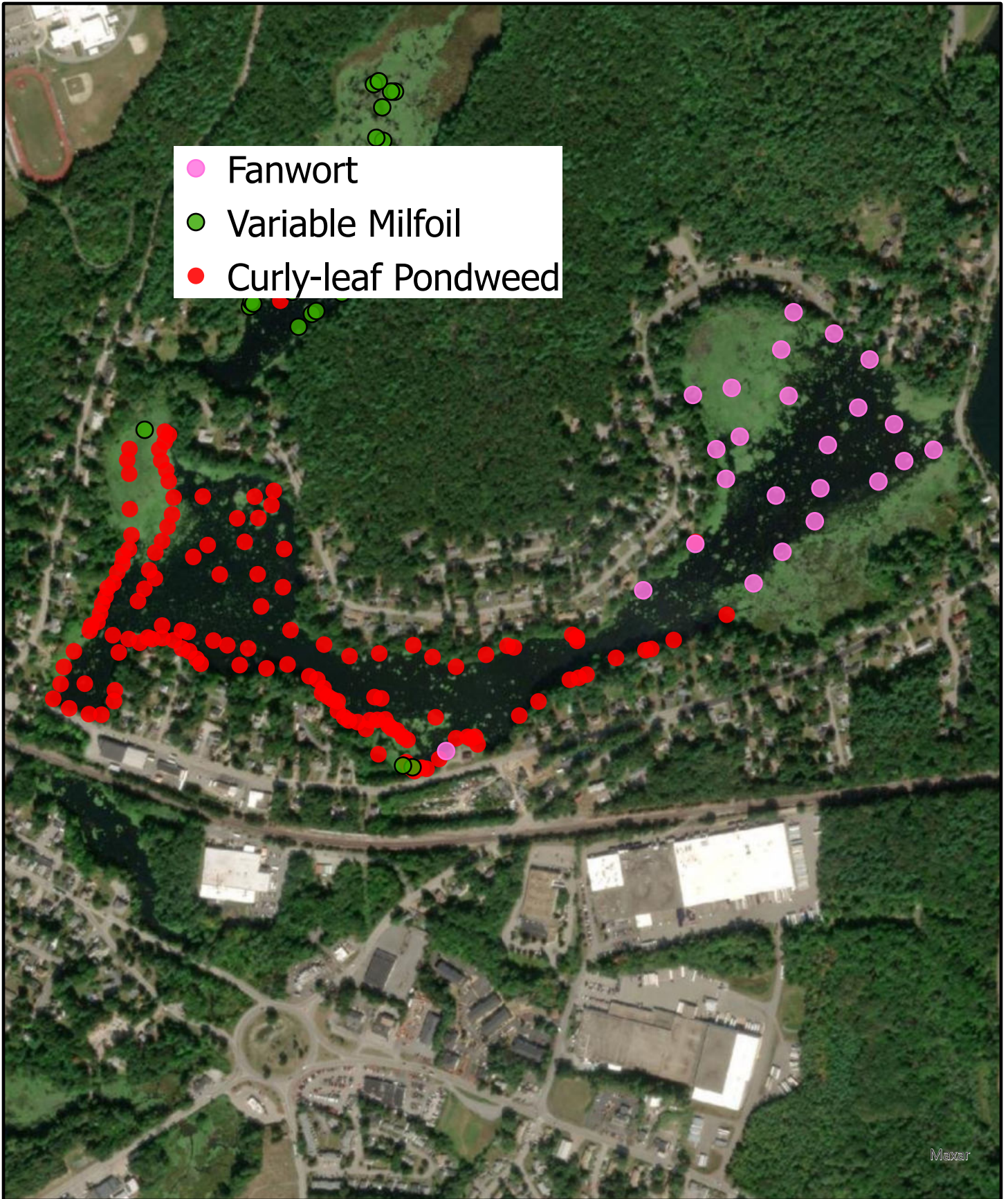




- Fanwort
- Curly-leaf Pondweed
- Variable Milfoil

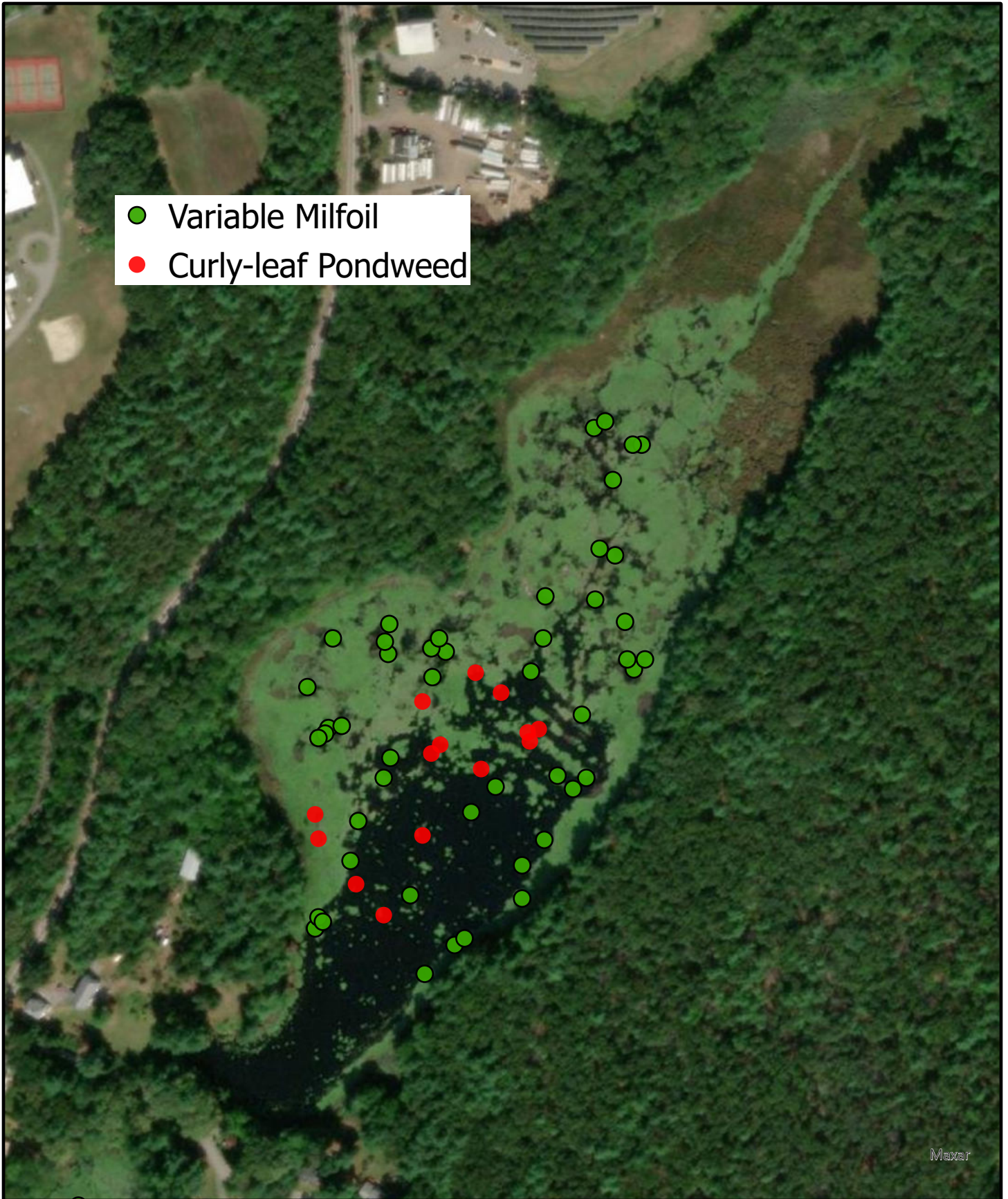






- Fanwort
- Variable Milfoil
- Curly-leaf Pondweed





- Variable Milfoil
- Curly-leaf Pondweed



● Variable Milfoil



Maxar



**Sandy Pond**  
Post-Treatment Invasive Species Map  
**Ayer, MA**

Survey Date  
10/12/2022  
Map Date  
10/13/2022



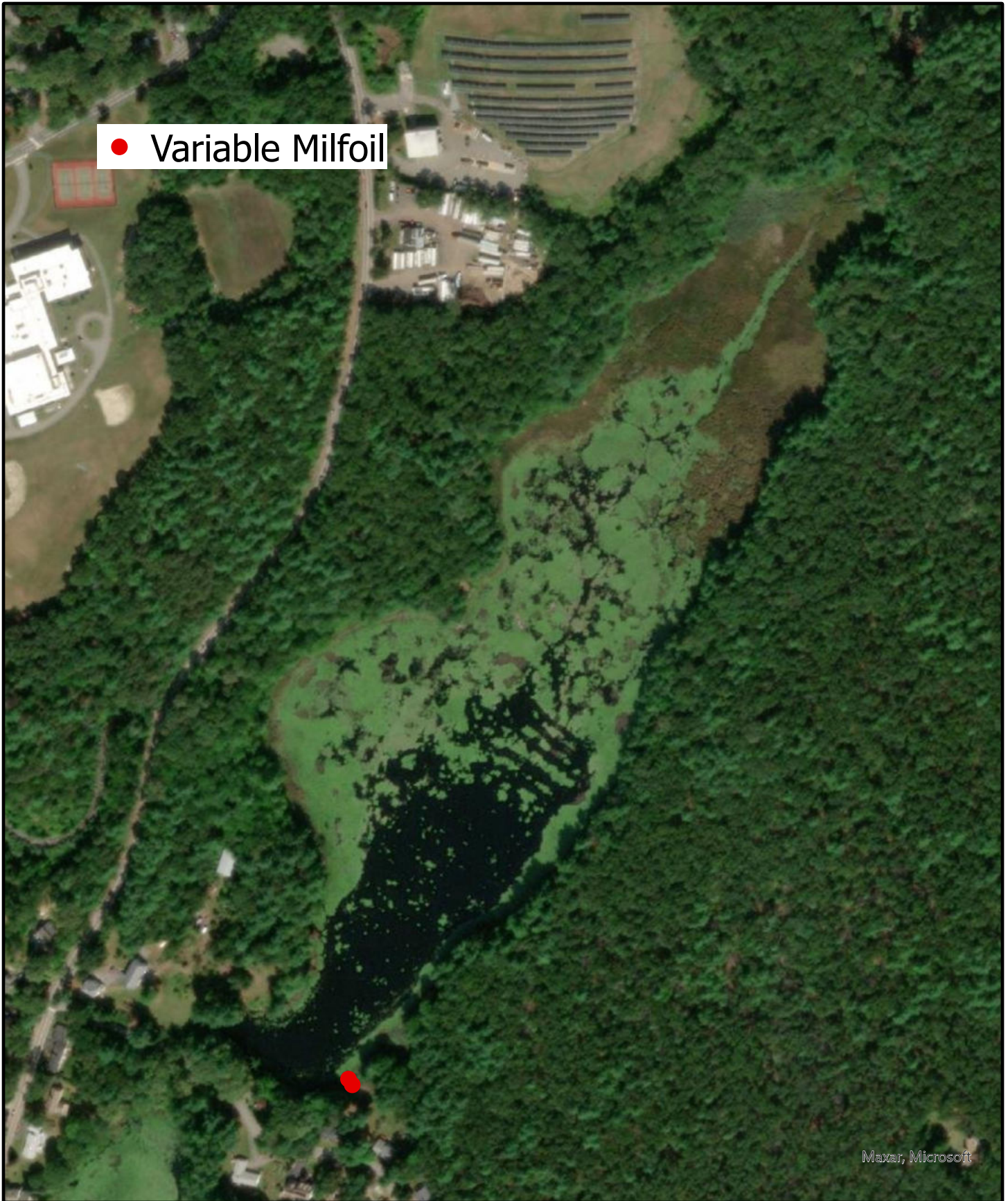


**Flannagan Pond**  
Post-Treatment Invasive Species Map  
**Ayer, MA**

Survey Date  
9/21/2022

Map Date  
9/21/2022





● Variable Milfoil

Maxar, Microsoft



***Pine Meadow Pond***  
Post-Treatment Invasive Species Map  
**Ayer, MA**

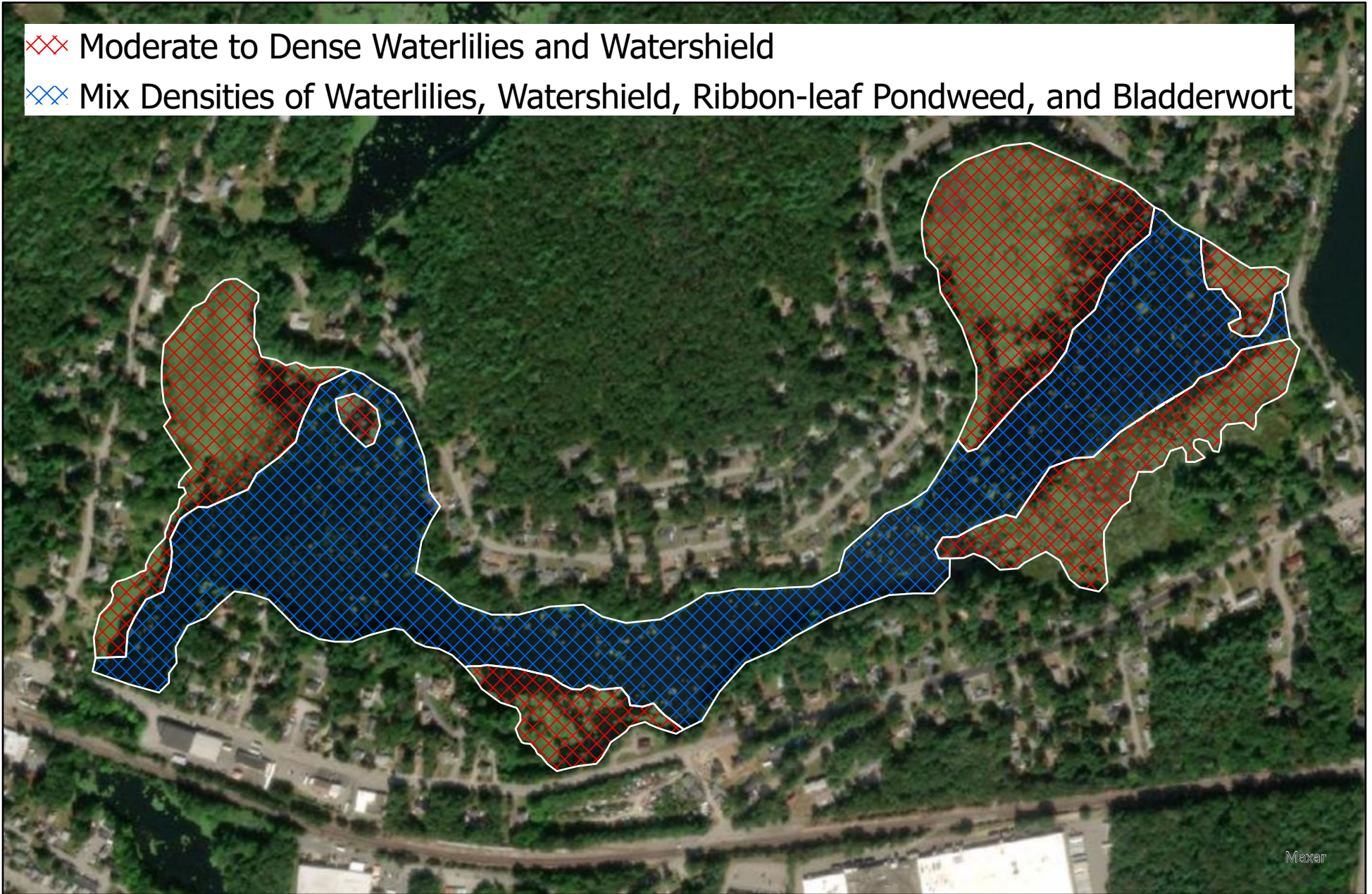
Survey Date  
9/21/2022  
Map Date  
9/21/2022



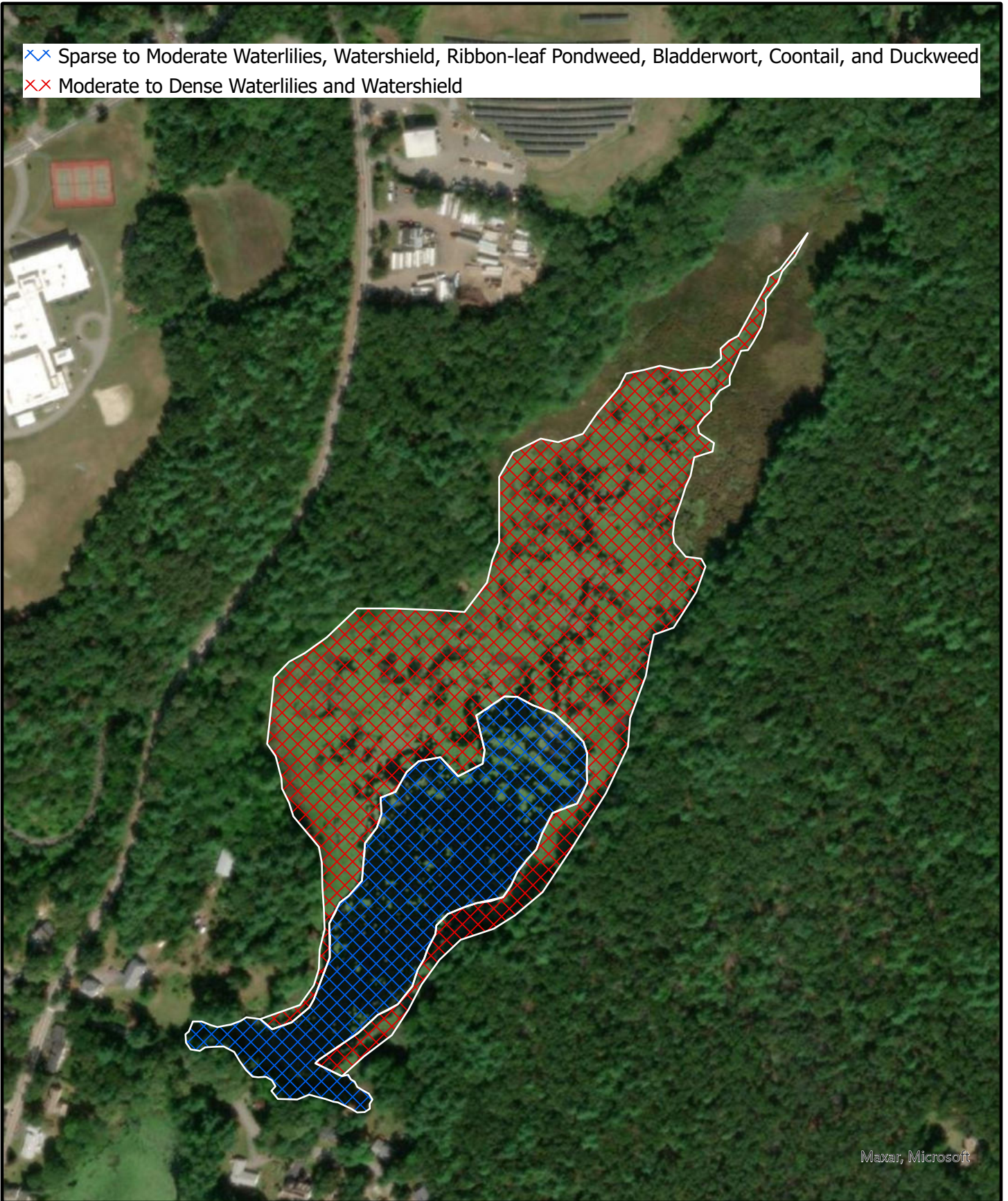
✕ Mix Densities of Ribbon-leaf Pondweed, Bladderwort, Waterlilies, and Watershield  
✕ Waterlilies and Watershield



- ⊠ Moderate to Dense Waterlilies and Watershield
- ⊠ Mix Densities of Waterlilies, Watershield, Ribbon-leaf Pondweed, and Bladderwort



✕ Sparse to Moderate Waterlilies, Watershield, Ribbon-leaf Pondweed, Bladderwort, Coontail, and Duckweed  
✕✕ Moderate to Dense Waterlilies and Watershield



Maxar, Microsoft





## 2023 Recommended Budgets – Ayer Ponds

Permitting / Surveys / Reporting (All Ponds)		
Pond	Task	Cost
All Ponds	<ul style="list-style-type: none"> <li>Prepare and file MA-DEP License to Apply Chemicals Permit</li> </ul>	\$350
All Ponds	<ul style="list-style-type: none"> <li>Pre-Treatment Survey</li> </ul>	\$1,500
All Ponds	<ul style="list-style-type: none"> <li>Post-Treatment Survey</li> </ul>	\$1,500
All Ponds	<ul style="list-style-type: none"> <li>Delivery of Year-End Report</li> </ul>	\$1,000
<b>Total Cost: Permitting / Surveys / Reporting (All Ponds)</b>		<b>\$4,350</b>

Treatment Tasks (Sandy Pond)		
Pond	Task	Cost
Sandy Pond	<ul style="list-style-type: none"> <li>Initial Sonar ONE Application at Inlets</li> </ul>	\$3,700
Sandy Pond	<ul style="list-style-type: none"> <li>Sonar ONE “Bump” Treatment at Inlet</li> </ul>	\$1,580
Sandy Pond	<ul style="list-style-type: none"> <li>Diquat Treatment</li> </ul>	\$1,500
Sandy Pond	<ul style="list-style-type: none"> <li>Phragmites/Waterlily Treatment</li> </ul>	\$750
<b>Total Cost: Treatment Tasks (Sandy Pond)</b>		<b>\$7,530</b>

Treatment Tasks (Flannagan Pond)		
Pond	Task	Cost
Flannagan Pond	<ul style="list-style-type: none"> <li>Initial Sonar ONE application in 10-acres</li> </ul>	\$4,800
Flannagan Pond	<ul style="list-style-type: none"> <li>Sonar ONE “Bump” Treatment in 10-acres</li> </ul>	\$2,400
Flannagan Pond	<ul style="list-style-type: none"> <li>Diquat Treatment</li> </ul>	\$3,650
Flannagan Pond	<ul style="list-style-type: none"> <li>Waterlily Treatment</li> </ul>	\$750
<b>Total Cost: Treatment Tasks (Flannagan Pond)</b>		<b>\$11,600</b>

Treatment Tasks (Pine Meadow Pond)		
Pond	Task	Cost
Pine Meadow Pond	<ul style="list-style-type: none"> <li>Diquat Treatment</li> </ul>	\$2,950
Pine Meadow Pond	<ul style="list-style-type: none"> <li>Waterlily Treatment</li> </ul>	\$950
<b>Total Cost: Treatment Tasks (Pine Meadow Pond)</b>		<b>\$3,900</b>

**Optional/As-Needed or Requested Services (Water Testing & Algae Control)**

Permitting / Surveys / Reporting (All Ponds)		
Pond	Task	Cost
All Ponds	<ul style="list-style-type: none"> <li>Sample collection and analysis for algae ID and enumeration</li> </ul>	\$400 total collection cost + \$175 per sample (total cost for three ponds=\$925)
All Ponds	<ul style="list-style-type: none"> <li>Water sampling including SePro Lab's WQ Baseline Plus Bundle. Alkalinity, Chlorophyll a, Conductivity, Hardness, Nitrates &amp; Nitrites, Total Kjeldahl Nitrogen, pH, Free Reactive Phosphorus, Total Phosphorus, Turbidity</li> </ul>	\$400 total collection cost + \$500 per sample (total cost for three ponds = \$1,900)
All Ponds	<ul style="list-style-type: none"> <li>Placement of EutroSORB filters at inlets and/or stormwater outfalls</li> </ul>	\$250 per Filter
Sandy Pond	<ul style="list-style-type: none"> <li>½ pond treatment with copper sulfate for the control of algae</li> </ul>	\$2,750
Flannagan Pond	<ul style="list-style-type: none"> <li>½ pond treatment with copper sulfate for the control of algae</li> </ul>	\$2,750
Pine Meadow Pond	<ul style="list-style-type: none"> <li>½ pond treatment with copper sulfate for the control of algae</li> </ul>	\$1,500

\*In the event multiple samplings are completed simultaneously or algae samples are collected at the same time as nutrients or other parameters, only one collection cost will apply.

\*\*Copper sulfate treatments are limited to no more than ½ waterbody during a single treatment per product label. In the event copper sulfate treatments are requested/required, Ayer Conservation Commission must provide approval for use of copper sulfate. If EutroSORB filters are selected for phosphorus filtration, approval must also be provided for use of this technology.

\*\*\*Pricing for all treatments assumes that Water & Wetland posts the shoreline of the pond(s) several days prior to treatment. To assist with lowering the budgets, Water & Wetland is pleased to offer an additional discount on treatment prices if the Town posts the shoreline in advance. Water & Wetland can provide neon posters for this via USPS.

**Ayer Conservation Commission Guidelines  
for Reviewing Tree Removal Projects in Wetlands  
Resource Areas and Buffer Zones**

**INTRODUCTION:**

The Ayer Conservation Commission under the Massachusetts Wetlands Protection Act and Regulations and Town of Ayer Wetlands Protection Bylaw and Regulations is a bylaw required to review any “work” within 100 feet of a wetland Resource Area (which includes, without limitation; marsh, wet meadow, bog, swamp, vernal pool, bank, reservoir, lake, pond, intermittent stream or creek, beach, land under water, lands subject to flooding or inundation by groundwater or surface water) or 200 feet of a perennial stream or river. The review is to determine if the work might “alter” the wetlands resource area. The Commission therefore must decide on the removal of trees which are dead and/or damaged and/or diseased, and which pose a threat to private or public property (“hazard trees”), or which area within the footprint of proposed construction. This Policy provides a consistent approach to treat removal that protects the wetlands functions and values provided by trees within these areas.

Trees are an important part of Ayer’s stormwater management and visual landscape, as well as provide a source of cleaner air, shadier streets, and habitats for birds and other wildlife. The shade produced by trees help reduce temperatures in the summer, which can reduce energy usage and air conditioning cost. With respect to wetland functions and values, trees also provide shade that maintains a favorable microclimate for wetlands plants, fish, reptiles, and amphibians and insects. Trees provide wildlife habitat features which include food, shelter, and nesting, migratory and perching habitats. Dead limbs and hollow trunks provide unique spaces for small mammals and birds to build nest, dens, and shelter. Additionally, leaves shed by trees provide valuable nutrients, habitat complexity for overwintering organisms, and organic matter that support the texture and fertility of soils.

**POLICY:**

In recognition of these values, the Commission is implementing the following Tree Removal Policy for the removal of any and all trees within the Commission’s jurisdictional areas which include but not limited to, Wetland Resource Areas, 100-foot Buffer zone and the 200-foot River Front Buffer Zone.

- The removal of any trees within the Commissions jurisdictional area will require the Conservation Agent, or a member of the Commission to visit the site and inspect the tree(s) wishing to be removed. The Commission requires, when feasible that a “snag” of at least 6 feet in height be left standing. The snag will provide valuable wildlife habitat.
- The Commission requires that any healthy tree removed with a 6-inch diameter at breast height, within the Commissions jurisdictional area be replaced at a ratio of 2:1 (two new trees for every one healthy tree removed), with a native tree species being used as the replacement trees (see approved Replacement Tree List) This includes trees within a single-family lot, Commercial Development, or as part of a larger development or subdivision. The Replacement Tree List is preferred an Applicant may propose wildlife habitat placement with high wildlife value native shrubs in lieu of or in addition to tree. Shrubs shall be proposed at no less than a 4:1 ratio.
- Healthy trees maybe hazardous trees to an existing structure or within the footprint of proposed construction.

- The Commission requires that any, unhealthy, hazardous, dead, or dying tree within the jurisdictional area be inspected on site by the Conservation Agent or a member of the Commission prior to removal. At this onsite inspection the Commission or its Agent may require that a Certified Arborist be present or a representative from the tree removal company to answer questions regarding the health of the tree, and methods of removal.
- The property owner must submit a Request for Administrative Approval for the removal of any tree wishing to be removed. These forms can be found on the Conservation Commissions page on the town's website or by contacting the Conservation Office.

For further information, please contact:

Conservation Agent

Town Hall, 1<sup>st</sup> Floor

1 Main St., Ayer MA, 01432

Phone: 978-772-8220 ext. 143

Email: [concom@ayer.ma.us](mailto:concom@ayer.ma.us)

**Ayer Conservation Commission  
Guidelines for Reviewing Tree Removal Projects**

**Replacement Trees – Native To New England**

<b>Wetter Areas</b>	<b>Drier Areas</b>
<i>Acer rubrum</i> (red maple)	<i>Acer saccharum</i> (sugar maple)
<i>Acer saccharoides</i> (silver maple)	<i>Betula papyrifera</i> (paper birch)
<i>Betula lenta</i> (sweet/black birch)	<i>Fagus grandifolia</i> (American beech)
<i>Betula nigra</i> (river birch)	<i>Juniperus virginiana</i> (eastern red cedar)
<i>Betula populifolia</i> (gray birch)	<i>Liriodendron tulipifera</i> (tulip tree)
<i>Chamaecyparis thyoides</i> (Atlantic white cedar)	<i>Pinus strobus</i> (white pine)
<i>Nyssa sylvatica</i> (tupelo, black gum)	<i>Platanus occidentalis</i> (sycamore)
<i>Quercus bicolor</i> (swamp white oak)	<i>Prunus serotina</i> (black cherry)
<i>Tsuga canadensis</i> (Canada hemlock)*	<i>Quercus alba</i> (white oak)
	<i>Quercus coccinea</i> (scarlet oak)
	<i>Quercus palustris</i> (pin oak)
	<i>Quercus rubra</i> (red oak)
* <i>Tsuga canadensis</i> should only be planted if a long-term monitoring plan (approved by the Conservation Commission) is in place to control woolly adelgid.	<i>Quercus velutina</i> (black oak)
	<i>Tilia americana</i> (basswood)

**High Wildlife Value Shrubs – Native to New England**

<b>Wetter Areas</b>	<b>Drier Areas</b>
<i>Alnus incana</i> ( <i>rugosa</i> ) (Speckled Alder)	<i>Amelanchier spp.</i> (serviceberry)
<i>Clethra alnifolia</i> (Sweet Pepperbush)	<i>Swida alternifolia</i> (alternate-leaved dogwood)
<i>Swida amomum</i> (Silky Dogwood)	<i>Cornus racemosa</i> (gray dogwood)
<i>Ilex verticillata</i> (Winterberry Holly)	<i>Corylus americana</i> (American hazelnut)
<i>Salix discolor</i> (Pussy Willow)	<i>Hamamelis virginiana</i> (witch hazel)
<i>Vaccinium corymbosum</i> (Highbush Blueberry)	<i>Photinia melanocarpa</i> (black chokeberry)
<i>Viburnum dentatum</i> (Northern Arrowwood)	<i>Viburnum opulus</i> ( <i>highbush</i> cranberry)