NOTICE OF INTENT

Mystic River Watershed
Maillet Conservation Area
Reading, MA

Upper Mystic Stormwater Wetlands Project

May 2021

PREPARED FOR:

Ryan Percival, P.E., Town Engineer
Town of Reading
16 Lowell Street
Reading, MA 01867

PREPARED BY:

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

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May 26, 2021

Reading Conservation Commission
c/o Charles Tirone, Conservation Administrator
16 Lowell Street
Reading, MA 01867

Re: Notice of Intent Application – Maillet, Sommes and Morgan Land
0 Lowell Street and 0 Willow Street, Reading, Massachusetts

Dear Members of the Conservation Commission:

On behalf of the Applicant, the Town of Reading, the Horsley Witten Group, Inc. (HW) is submitting the enclosed Notice of Intent (NOI) application and supporting materials for open space and stormwater improvements at the Maillet, Sommes and Morgan (Maillet) Conservation Area, comprising of 0 Lowell Street and 0 Willow Street in Reading, MA.

The proposed project is part of a larger, grant-funded effort through the Municipal Vulnerability Preparedness grant program (MVP) designed to address current and future flooding within the Mystic River Watershed and improve climate change resiliency and water quality while advancing environmental justice and open space connectivity.

The Town of Reading's site at the Maillet Conservation land was one of the priority sites originally identified to address the program goals and has been selected for design development and permitting. The project will involve installation of a constructed stormwater wetland system to address local flooding and improve water quality within the Aberjona River. The project also seeks to enhance existing resource areas through native plantings and invasive species control, as well as improve the existing trail system onsite with development of accessible trails, formalized trail markers, educational signage, and seating areas.

The proposed project/activities will occur within the buffer zone to Bordering Vegetated Wetland (BVW) associated with the Aberjona River, with a small BVW crossing to connect proposed constructed stormwater wetlands and trail systems. These jurisdictional areas are regulated under the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131 § 40) and the Town of Reading General Bylaw (Section 7.1) and associated Wetlands Protection Regulations. Proposed mitigation includes local flooding and water quality improvements, wetland replacement and restoration, invasive species management, and restoration of native plant communities. It is anticipated that the entire project will result in an overall improvement to the interests protected by these resource areas.

Additionally, proposed open space improvements will support the recreational goals of the Reading Trail Committee and the Town's current Open Space and Recreation Plan, which include, but are not limited to, protecting open space for watershed protection and wildlife habitat; enhancing open space for passive recreation; making open spaces pedestrian and

bicycle friendly; improving or creating trails where possible; providing adequate wayfinding; and connecting open spaces.

Details of the proposed project are shown on the site plans, entitled “Mystic River Watershed, Maillet Conservation Area, Reading, Massachusetts” dated May 2021, and described in the attached project narrative.

Enclosed please find 2 copies of the NOI application, supporting documentation, and site plans for the proposed project*. As this is a municipal project, the state filing fees are exempt, and the Applicant is seeking a waiver for any local filing fees. An electronic copy of all materials has been submitted as well and copied to the Massachusetts Department of Environmental Protection (MassDEP), Northeast Regional Office. HW has also sent notification of the pending public hearing to abutters in accordance with State and local filing regulations and policies.

Thank you in advance for your review of this NOI application. We look forward to meeting with you next month. If you have any questions and/or require additional information pertaining to this submittal, please contact me at (508) 833-6600 or at jrelstab@horsleywitten.com.

Sincerely,

Horsley Witten Group, Inc.

Jennifer R. Relstab, P.E.
Project Manager

Enclosures

cc: MassDEP, Northeast Regional Office
Alex Rozycki, P.E., Town of Reading
Ryan Percival, P.E., Town of Reading
Catherine Pedemonti, Mystic River Watershed Association
Patrick Herron, Mystic River Watershed Association

*Additional hard copies will be forwarded to Commission members as requested.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

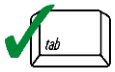
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

READING
City/Town

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



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

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

0 Willow Street and 0 Lowell Street — a. Street Address
Reading — b. City/Town
01867 — c. Zip Code

Latitude and Longitude:
d. Latitude
e. Longitude

26 — f. Assessors Map/Plat Number
50 & 32 — g. Parcel /Lot Number

2. Applicant:

Alex — a. First Name
Rozycki — b. Last Name
Town of Reading — c. Organization
16 Lowell Street — d. Street Address
Reading — e. City/Town
MA — f. State
01867 — g. Zip Code
781-942-9082 — h. Phone Number
i. Fax Number
arozycki@reading.ma.us — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name
c. Organization
d. Street Address
e. City/Town
f. State
g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

Jennifer — a. First Name
Relstab — b. Last Name
Horsley Witten Group, Inc. — c. Company
90 Route 6A — d. Street Address
Sandwich — e. City/Town
MA — f. State
02563 — g. Zip Code
508-833-6600 — h. Phone Number
i. Fax Number
jrelstab@horsleywitten.com — j. Email address

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

(Fee Exempt - Municipal Project) — a. Total Fee Paid
b. State Fee Paid
c. City/Town Fee Paid

Massachusetts Department of Environmental Protection
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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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A. General Information (continued)

6. General Project Description:

The Applicant proposes to install a constructed wetland system to address local flooding and improve water quality, provide open space improvments, and enhance existing resource areas through native plantings and invasive species control at the Maillet, Sommes and Morgan Land. Proposed activities will occur within the buffer zone to Bordering Vegetated Wetland with a small BVW crossing.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☒ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☒ Yes ☐ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

310 CMR 10.53(3) construction of catwalks, etc.; 310 CMR 10.53(3)(l) - water dependent uses

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Middlesex	
a. County	b. Certificate # (if registered land)
15148	11
c. Book	d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☒ Bordering Vegetated Wetland	711 1. square feet	1,000 (+500 SF restoration) 2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced

f. ☐ Riverfront Area

1. Name of Waterway (if available) - **specify coastal or inland**

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☒ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

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C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   August 1, 2017
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-endangered-species-act-mesa-regulatory-review).
Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.
** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. ☐ Is this an aquaculture project? d. ☐ Yes ☐ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

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C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☒ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). 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. ☒ 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.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

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D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Mystic River Watershed, Maillet Conservation Area, Reading, Massachusetts
a. Plan Title

Horsley Witten Group, Inc.
b. Prepared By

Richard A. Claytor, Jr., P.E.
c. Signed and Stamped by

May 2021
d. Final Revision Date

1"=20' and 1"=40'
e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

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 pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I 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 by Certificate of Mailing or 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.

1. Signature of Applicant	2. Date 5-25-21
3. Signature of Property Owner (if different)	4. Date 5-25-21
5. Signature of Representative (if any)	6. Date 5-26-21

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

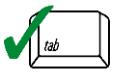
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

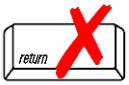
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI 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:

a. Street Address	b. City/Town
0 Willow Street and 0 Lowell Street	Reading

c. Check number	d. Fee amount
Fee Exempt - Municipal	

2. Applicant Mailing Address:

a. First Name	b. Last Name
Alex	Rozycki

c. Organization: Town of Reading

d. Mailing Address: 16 Lowell Street

e. City/Town	f. State	g. Zip Code
Reading	MA	01867

h. Phone Number	i. Fax Number	j. Email Address
781-942-9082		arozycki@ci.reading.ma.us

3. Property Owner (if different):

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

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

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Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Fee Exempt			

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	Fee Exempt a. Total Fee from Step 5
State share of filing Fee:	b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

Fee Exempt Project - see also Waiver Request

Reading Wetlands Protection Bylaw Fee Calculation Form

Type of Activity	NOI Filing Fee	Calculated Fee
A. Each addition to or accessory use activity Associated with an existing single-family or Multi-family residential dwelling, including but not limited to driveways, sheds, swimming pools, athletic courts, additions to existing houses, grading, and landscaping	$125.00 plus all applicable fees listed in lines F though K	
B. Each new single-family dwelling, including associated driveway, utilities, grading, landscaping, and drainage structures	$600.00 plus all applicable fees listed in lines F though K	
C. Each new multi-family dwelling	$600.00 plus $125.00 per unit located in any Resource Area or Buffer Zone, plus all applicable fees listed in lines F though K	
D. Each subdivision roadway, or other roadway, or driveway (other than for a single-family dwelling), and all associated drainage structures, utilities, grading, curbing, landscaping, and other associated work exclusive of dwellings	$1,000.00 plus $600.00 per house, plus all applicable fees listed in lines F though K	
E. Each commercial, industrial, institutional or other non-residential project	$1,000.00 , plus all applicable fees listed in lines F though K	
F. Boundary delineation for any Resource Area	$1.25 per linear foot of Resource Area boundary, up to a maximum of $125 for a single-family lot and $1,250 for any other lot.	
G. Temporary and /or permanent alteration of land within the Buffer Zone	$1.25 per square foot of Buffer Zone altered for any temporary or permanent alteration within 25 feet of a Resource Area or any permanent structure within 35 feet of a Resource Area	
H. Work in Floodplain	$1.25 per square foot of Floodplain temporarily or permanently altered outside of any other Resource Area and Buffer Zone	
I. Work in Vernal Pool habitat	$11.00 per square foot of Vernal Pool habitat temporarily or permanently altered.	
J. Work in Freshwater Wetland, Wet Meadow, Bog, Swamp, Marsh, Creek, River, Stream, Pond, Lake, Land Under Waterbody	$11.00 per square foot of Resource Area temporarily or permanently altered	
K. Work in Bank	$11.00 per linear foot of Bank temporarily or permanently altered	
	Total Fee Calculated	$_____

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act, M.G.L., c.131, s.40 and Reading General Bylaws, Section 7.1

(To be submitted to the Conservation Commission when filing a Notice of Intent or Abbreviated Notice of Resource Area Delineation or Request for Determination of Applicability)

I, Amy M. Ball, hereby certify under the pains and penalties of perjury that on or before June 1, 2021, the Horsley Witten Group, Inc. (HW) gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws'. c.131, s.40, and the **DEP Guide to Abutter Notification** dated April 8,.1994, and Reading General Bylaws, Section 7.1 in connection with the following. matter:

(Check the applicable form.)

X Notice of Intent

_____ Abbreviated Notice of Resource Area Delineation

_____ Request for Determination of Applicability

filed under M.G.L., c.131, s.40 and R.G.B., s.7.1 by the Town of Reading with eh Town of Reading Conservation Commission on May 26, 2021 for property located at the Maillet, Sommes and Morgan Conservation Land at 0 Willow Street and 0 Lowell Street in Reading, Massachusetts.

The form of the notification and list of abutters to whom it was given and their addresses are attached to this Affidavit of Service.

Name _____ Date 27 May 2021

TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693

BOARD OF ASSESSORS
TEL.: 781-942-9027
FAX: 781-942-9037

ABUTTERS LIST

CERTIFICATION

FOR BOARD OF ASSESSORS

VICTOR P. SANTANIELLO, CHIEF APPRAISER

PHILIP CANNIFF, ASSISTANT APPRAISER

DATE: 5/19/2021

TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693

BOARD OF ASSESSORS
TEL.: 781-942-9027
FAX: 781-942-9037

March 5, 2019

To whom it may concern;

In an effort to streamline our business practices and desire to decrease turnaround time for taxpayers and other municipal departments, please be advised that effective this date, we the Board of Assessors for the Town of Reading Hereby delegate to the Town Appraiser of the Assessing Department signatory authority of all certified abutter's lists as compiled by the department.

Sincerely,

Reading Board of Assessors

Robert N. Marshall **Michael E. Golden** **Brendan Zarechian**

Patriot Properties

Reading

05/19/2021

11:23:46AM

Abutters List

Filter Used: DataProperty.AccountNumber in (5098,5104,5125,3682,5100,5065,5060,5155,5240,5061,5072,5106,5074,5077,5241,5099,5073,5075,5263,5031,5085,5096,5070,5056,5076,5097,5243,5057,5109,5115,5156,5107..

0 Willow Street Abutters list

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
020.0-0000-0221.0	SUMMER AVE	TOWN OF READING	CONSERVATION	16 LOWELL ST	READING	MA	01867
026.0-0000-0003.0	80 WILLOW ST	TALAKOKKULA SREEDHAR	ADEPU SHEETHAL	80 WILLOW ST	READING	MA	01867
026.0-0000-0004.0	76 WILLOW ST	KELLY JUSTINE L	GOODFELLOW JOHN J TE	76 WILLOW ST	READING	MA	01867
026.0-0000-0005.0	72 WILLOW ST	HOGAN DANIEL W IV	HOGAN PATRICIA M	72 WILLOW STREET	READING	MA	01867
026.0-0000-0028.0	WILLOW ST	TOWN OF READING	WATER DEPT	16 LOWELL STREET	READING	MA	01867
026.0-0000-0029.0	WILLOW ST	TOWN OF READING	WATER DEPT	16 LOWELL STREET	READING	MA	01867
026.0-0000-0030.0	WILLOW ST	TOWN OF READING	WATER DEPT	16 LOWELL STREET	READING	MA	01867
026.0-0000-0031.0	270 LOWELL ST	HARDY EILEEN M TRUSTEE	EILEEN M HARDY REVOCAB	270 LOWELL ST	READING	MA	01867
026.0-0000-0032.0	LOWELL ST	TOWN OF READING		16 LOWELL STREET	READING	MA	01867
026.0-0000-0033.0	284 LOWELL ST	CORRENTE NICHOLAS J		284 LOWELL STREET	READING	MA	01867
026.0-0000-0034.0	2 WILLOW ST	MOZUMDER SHAYMAL	BAIDYA PRITILATA	2 WILLOW ST	READING	MA	01867
026.0-0000-0035.0	6 WILLOW ST	MOROSAN DANIELA		6 WILLOW ST	READING	MA	01867
026.0-0000-0036.0	8 WILLOW ST	MILLS ROBERT B	C/O DAVID M LEVINE	40 BERKSHIRE DRIVE	WILLIAMSTOWN	MA	01267
026.0-0000-0037.0	12 WILLOW ST	CARNEY WILLIAM M (LE)	CARNEY KATHLEEN TRUST	12 WILLOW ST	READING	MA	01867
026.0-0000-0038.0	14 WILLOW ST	COOK KENNETH J	PAULA COOK	14 WILLOW ST	READING	MA	01867
026.0-0000-0039.0	16 WILLOW ST	DUBOIS MARCEL	SARAH A DUBOIS	16 WILLOW ST	READING	MA	01867
026.0-0000-0040.0	20 WILLOW ST	FLEURY JOSEPH A	FLEURY JESSICA A TE	20 WILLOW ST	READING	MA	01867
026.0-0000-0041.0	22 WILLOW ST	MURPHY LOIS R		22 WILLOW ST	READING	MA	01867
026.0-0000-0042.0	26 WILLOW ST	MACDONALD RICHARD R	MARYANN MACDONALD	26 WILLOW ST	READING	MA	01867
026.0-0000-0043.0	28 WILLOW ST	ANDERSON REBECCA		28 WILLOW ST	READING	MA	01867
026.0-0000-0044.0	30 WILLOW ST	JOHNSON KEVIN J	KAREN E JOHNSON	30 WILLOW ST	READING	MA	01867
026.0-0000-0045.0	34 WILLOW ST	WALKER WILLIAM R	WALKER CASEY QUINN TE	34 WILLOW ST	READING	MA	01867
026.0-0000-0046.0	42 WILLOW ST	PHILLIPS GARY D	LINDA M PHILLIPS	42 WILLOW ST	READING	MA	01867
026.0-0000-0047.0	46 WILLOW ST	PAPPALARDO ROBERT J	DONNA M PAPPALARDO	46 WILLOW STREET	READING	MA	01867
026.0-0000-0048.0	54 WILLOW ST	WHITMER DANIELLE A		54 WILLOW ST	READIING	MA	01867
026.0-0000-0049.0	60 WILLOW ST	RICHARDSON ANDREW TRUSTEE	THE RINDONE IRREVOC TR	60 WILLOW ST	READING	MA	01867
026.0-0000-0050.0	WILLOW ST	TOWN OF READING		16 LOWELL STREET	READING	MA	01867
026.0-0000-0051.0	LOWELL ST	TOWN OF READING		16 LOWELL ST	READING	MA	01867
026.0-0000-0057.0	46 BOND ST	HOLLIS JEFFREY S ETAL TRUSTEI	HOLLIS 2015 TRUST	46 BOND ST	READING	MA	01867
026.0-0000-0068.0	256 LOWELL ST	PARKER MARK E TRUSTEE	256 LOWELL ST REALTY TR	256 LOWELL STREET	READING	MA	01867
026.0-0000-0069.0	258 LOWELL ST	MARCHANT DAVID	SARAH MARCHANT	258 LOWELL ST	READING	MA	01867
026.0-0000-0070.0	LOWELL ST	MARCHANT DAVID	SARAH MARCHANT	258 LOWELL STREET	READING	MA	01867
026.0-0000-0071.0	266 LOWELL ST	BENEKE CHRISTOPHER J	CHRISTA J BENEKE	266 LOWELL ST	READING	MA	01867
026.0-0000-0072.0	38 WILLOW ST	BROTHERS MICHAEL A	AZITA SADRI	38 WILLOW STREET	READING	MA	01867
026.0-0000-0074.0	101 WILLOW ST	AUSTIN PREP SCHOOL		101 WILLOW ST	READING	MA	01867
026.0-0000-0075.0	59 WILLOW ST	SOCCORSO ELIZABETH ANN	STEVEN S MCCOY	59 WILLOW ST	READING	MA	01867
026.0-0000-0076.0	53 WILLOW ST	LINDSKOG SUSAN J		53 WILLOW ST	READING	MA	01867
026.0-0000-0077.0	47 WILLOW ST	CHASE ALFRED F JR TRUSTEE	CHASE FAMILY IRREVOC IN	47 WILLOW ST	READING	MA	01867
026.0-0000-0078.0	41 WILLOW ST	CIRIELLO RICHARD JR		41 WILLOW ST	READING	MA	01867
026.0-0000-0079.0	37 WILLOW ST	POWERS CHRISTOPHER R	MARGARET M POWERS	37 WILLOW STREET	READING	MA	01867
026.0-0000-0080.0	31 WILLOW ST	RONAYNE SEAN	GAIL M RONAYNE	31 WILLOW ST	READING	MA	01867
026.0-0000-0081.0	27 WILLOW ST	DUFTON PHILIP A	ELIZABETH A DUFTON	27 WILLOW STREET	READING	MA	01867
026.0-0000-0082.0	25 WILLOW ST	IVEY JAMES ETAL	VEHRING REINHARD TC	25 WILLOW ST	READING	MA	01867
026.0-0000-0083.0	21 WILLOW ST	TRAYNOR MARYBETH		21 WILLOW ST	READING	MA	01867

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
026.0-0000-0084.0	15 WILLOW ST	PALMER THERESA A ETAL TRUST	NANCY M LEFAVE IRREV TF	15 WILLOW ST	READING	MA	01867
026.0-0000-0085.0	13 WILLOW ST	SZOPA KRISTIN L	ROBERT W SZOPA	13 WILLOW ST	READING	MA	01867
026.0-0000-0086.0	9 WILLOW ST	CASHMAN DONNA MARIE		9 WILLOW STREET	READING	MA	01867
026.0-0000-0087.0	3 WILLOW ST	BINGHAM JEREMEY	BINGHAM BRIDGET TE	3 WILLOW STREET	READING	MA	01867
026.0-0000-0097.0	LOWELL ST	TOWN OF READING	CONSERVATION	16 LOWELL ST	READING	MA	01867
026.0-0000-0127.0	17 INTERVALE TER	CREMIN MICHAEL JOSEPH IV	JULIE GREGORI CREMIN	17 INTERVALE TER	READING	MA	01867
026.0-0000-0128.0	15 INTERVALE TER	TEDESCO PETER	JULIE TEDESCO	15 INTERVALE TERRACE	READING	MA	01867
026.0-0000-0129.0	7 INTERVALE TER	CHAREST CAROL A ETAL TRS	INTERVALE REALTY TRUST	7 INTERVALE TER	READING	MA	01867
026.0-0000-0130.0	273 LOWELL ST	VINCENT DAVID	VINCENT ELISA	273 LOWELL ST	READING	MA	01867
026.0-0000-0131.0	269 LOWELL ST	LOCKE ANDREW J	TURNER SHANNON TE	269 LOWELL STREET	READING	MA	01867
026.0-0000-0132.0	265 LOWELL ST	HAVEN PETER M	SARA-JANE HAVEN	265 LOWELL STREET	READING	MA	01867
026.0-0000-0133.0	10 HARTSHORN ST	MINEO KIMBERLEE		10 HARTSHORN STREET	READING	MA	01867
026.0-0000-0146.0	5 HARTSHORN ST	TOBIN BRIAN D	ELIZABETH O DRISCOLL	5 HARTSHORN ST	READING	MA	01867
026.0-0000-0201.0	8 GROVE ST	OBRIEN ANNE MARIE	DANIEL BROKOWSKI	8 GROVE ST	READING	MA	01867
026.0-0000-0212.0	10 INTERVALE TER	BRAMANTE STEVE TR ETAL	BRAMANTE FAMILY TRUST	6 HALL ROAD	STONEHAM	MA	02180
026.0-0000-0213.0	287 LOWELL ST	BUONAROSA GARY J ETAL TRS	BUONAROSA 2003 REALTY	287 LOWELL ST	READING	MA	01867
026.0-0000-0214.0	14 INTERVALE TER	CURLEY SCOTT M II	REPPUCCI GINA M	14 INTERVALE TERRACE	READING	MA	01867
026.0-0000-0215.0	18 INTERVALE TER	RAWLINS WILSON T	ELIZABETH H RAWLINS	18 INTERVALE TER	READING	MA	01867
026.0-0000-0235.0	GROVE ST	TOWN OF READING	CONS./REC.	16 LOWELL STREET	READING	MA	01867

End of Report

Notification to Abutters Under the Massachusetts Wetlands Protection Act And the Reading Wetlands 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
Town of Reading (c/o Alex Rozycki, P.E., Engineering Division)

B. The applicant has filed a Notice of Intent with the Reading Conservation Commission of the Town of Reading seeking permission to remove, fill, dredge or alter an area subject to protection under the wetlands protection act (General Laws Chapter 131, Section 40)

C. The address of the lot where the activity is proposed is 0 Willow Street & 0 Lowell Street
Maillet, Sommes & Morgan Conservation Area

D. The activity consist of

The Applicant proposes to install a constructed wetland system to address local flooding and improve water quality, provide open space improvements, and enhance existing resource areas through native plantings and invasive species control. Proposed activities will occur within the buffer zone to Bordering Vegetated Wetland with a small BVW crossing.

E. Copies of the filing may be examined at the Conservation Commission office, Town Hall, between the hours of 7 am and 5:30 pm, M-Thursday, Friday's Closed.

For more information, Call: (781) 942 -6616

F. Copies of the Notice of Intent may be obtained from Horsley Witten Group by Calling 508-833-6600 during the hours 8:30 AM to 5:00 PM, Monday - Friday

G. Information regarding the date, time, and place of the public hearing may be obtained from the Conservation Commission Office by calling **781-941-6616** during the hours listed above

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in the Reading Daily Times Chronicle.

NOTE: Notice of the public hearing, including its date, time, and place, will be posted in the City or Town Hall not less than forty-eight (48) hours in advance.

NOTE: You also may contact the Reading Conservation Commission, (781) 942-9016, or the Department of Environmental Protection,(DEP) Regional Office for more information about this application or the Wetlands Protection Act.To contact DEP call the Northeast Regional Office at (978)694-3200

Town of Reading
16 Lowell Street
Reading, MA 01867-2683

CONSERVATION COMMISSION
Phone (781) 942-6616
Fax (781) 942-9071
ctirone@ci.reading.ma.us

LEGAL NOTICE
Town of Reading
Conservation Commission

Pursuant to Massachusetts General Law, Chapter 131, Section 40-the Wetlands Protection Act, and Reading General Bylaw, Section 7.1-Wetlands Protection, the Conservation Commission will hold a **Public Meeting**, **Wednesday, June 9, 2021** at **7:00 PM** to consider, at a "Zoom virtual meeting" During this time or such other time when posted, the Commission will discuss a **Notice of Intent,** filed by The Town of Reading Engineering Dept, Alex Rozycki, The proposed work is located at the Maillet, Sommes and Morgan (Maillet) Conservation Area is part of a larger, grant-funded effort through the Municipal Vulnerability Preparedness grant program (MVP) designed to address current and future flooding within the Mystic River Watershed and improve climate change resiliency and water quality while advancing environmental justice and open space connectivity.

The Applicant proposes to install a constructed wetland system to address local flooding and improve water quality, provide open space improvements, and enhance existing resource areas through native plantings and invasive species control. Proposed activities will occur within the buffer zone to Bordering Vegetated Wetland with a small BVW crossing. All work is within the hundred-foot Buffer Zone to a Bordering Vegetated Wetland and Intermittent Stream. The application and plans can be viewed on the Conservation Division page under current project.

Location: 0 Willow Street & 0 Lowell Street Assessor's Map 26 Lot 50 & 23

Conservation Commission
Mike Flynn, Chair
Annika Scanlon, Vice Chair
David Pinette
Carl Saccone
Martha Moore
Scott Keefe
John Sullivan

The Reading Conservation Commission is inviting you to a scheduled Zoom Meeting
Topic: Chuck Tirone Town of Reading's Zoom Conservation Meeting. Please check the Conservation Division page on the Town website for the latest meeting information.

Conservation Commission is inviting you to a scheduled Zoom meeting.

Topic: Conservation Commission' Zoom Meeting
Time: Jun 9, 2021 07:00 PM Eastern Time (US and Canada)

Join Zoom Meeting
https://zoom.us/j/96873574824?pwd=dW1IMHI4aDQ2TThmU3ZPWHBFZlYvZz09

Meeting ID: 968 7357 4824
Passcode: 289971
One tap mobile
+16465189805,,96873574824#,,,,*289971# US (New York)
+16465588656,,96873574824#,,,,*289971# US (New York)

Dial by your location
+1 646 518 9805 US (New York)
+1 646 558 8656 US (New York)
Meeting ID: 968 7357 4824
Passcode: 289971
Find your local number: https://zoom.us/u/abBNCaIiwt

Thank you

Project Narrative

Table of Contents

Table of Contents (cont.)

ATTACHMENTS

May 2021

1.0 INTRODUCTION

The Applicant, the Town of Reading, proposes to install a stormwater constructed wetland and provide open space improvements and site amenities at the Maillet, Sommes and Morgan (Maillet) Conservation Land, at 0 Lowell Street and 0 Willow Street in Reading, Massachusetts. The proposed project is part of a larger, grant-funded effort designed to address current and future flooding within the Mystic River Watershed and improve climate change resiliency and water quality while advancing environmental justice and open space connectivity. The project is presented as part of Phase II.

1.1 Background

Under Phase I, the Upper Mystic Working Group of the Resilient Mystic Collaborative (RMC) began prioritizing efforts toward watershed-scale flood management to strengthen community resilience to climate impacts including increased intensity, duration, and frequency of extreme precipitation events. Through rigorous desktop modeling and field analyses completed in late 2020 as part of a FY2019 Regional Municipal Vulnerability Grant (MVP), the Upper Mystic communities identified several locations for installation of regional stormwater wetlands to mitigate current and future flooding and improve water quality in locations that would advance environmental justice and open space connectivity.

The Town of Reading site at the Maillet Conservation Land located at 0 Willow Street and 0 Lowell Street was one of 30 sites originally identified by the FY 2019 MVP study. These 30 sites as well as many others identified, were vetted through a process that included ranking of sites, direct feedback from municipal staff, and a multi-criteria prioritization tool that helped to facilitate live feedback during public workshops. Through this process, this site was selected as one of the top 15 sites across the Upper Mystic River watershed and is one of six sites in the Town of Reading that rose to the top 15.

From these 15 sites, the RMC selected the top six sites for further study as part of this project, including developing permitting plans for the top three sites, which are located in the Towns of Lexington and Reading and in the City of Woburn (**Attachment A**, Figure 1).

Following field work and further discussion among the RMC, the Maillet site was selected based on the feasibility of the site for a stormwater wetland, constructability, and ecological benefits, both locally and regionally. A 10% conceptual design was developed and provided to the Town in December 2020.

1.2 Project Purpose and Need

Under Phase II, the Town of Lexington, guided by the Upper Mystic Working Group, was granted another MVP grant for FY 2021 to evaluate and advance the designs of the top three sites. Under this grant, wetlands delineations and existing conditions surveys of the top three sites were completed in early 2021 to further evaluate current environmental conditions of this and the other two sites.

Additional desktop and field analyses as well as discussions with the municipalities were completed to identify existing drainage patterns and flooding conditions. Key findings for the Town of Reading site include:

- Over 40 acres of stormwater drainage from Lowell Street drain directly to the Aberjona River without treatment;
- Several locations of local flooding have been identified through recent studies and discussions with the Town, including at the high school, at Bond Street, and at Willow Street near Austin Preparatory School; and
- Sediment deposition and bank erosion is visible along the Aberjona River on the project parcel.

The Aberjona River is also listed as impaired in Massachusetts Department of Environmental Protection's (MassDEP's) 2016 Integrated List of Waters as a Category 5 (Waters Requiring a TMDL). Impairments include:

- Physical substrate habitat alterations (no TMDL required)
- Ammonia, un-ionized
- Arsenic
- Benthic Macroinvertebrates
- Dissolved Oxygen [Nutrient Related]
- Escherichia Coli (E. Coli)
- Total Phosphorus [Nutrient Related]
- Sediment Bioassay (Chronic Toxicity Freshwater)

Further, the Aberjona River subwatershed was included in an Alternative Total Maximum Daily Limit (TMDL) study completed in 2020 that provides guidance on phosphorus load reduction targets to be achieved to meet attainment of water quality standards at the most impacted segment of the Mystic River Watershed, which along the lower Mystic River. While load reduction targets were not identified by subwatershed, the overall stormwater phosphorus load reduction required for the Mystic River Watershed is 67%.

1.3 Project Goals and Objectives

During Phase II, the Horsley Witten Group, Inc. (HW) has worked with the Town of Reading to develop refined conceptual designs and a permitting plan set that manages and treats local contributing stormwater drainage to the extent possible within a constructed wetland system to address local flooding and improve water quality within the Aberjona River. The project also

seeks to enhance existing resource areas through native plantings and invasive species control as well as improve the existing trail system onsite with accessible trails, formalized trail markers, educational signage, and seating areas. These open space improvements will help to support both active and passive recreation at the site and further the goals of the Reading Trail Committee, the 2013 Open Space and Recreation Plan, and local resident groups such as Walkable Reading.

The proposed project has undergone extensive public outreach by the Town and the Mystic River Watershed Association over the last two years, including meetings with the Conservation Commission and two public meetings recently held in March and April 2021. Comments provided during these meetings were reviewed and changes approved by the Town were incorporated within this permitting submittal.

The proposed project not only provides local management of stormwater runoff in the Town of Reading, but also supports the overall goals of the Mystic River Watershed of mitigating flooding and providing water quality in addition to highlighting open space connectivity.

2.0 GENERAL SITE DESCRIPTION

The Maillet Conservation Land is a 5.5-acre site consisting of two parcels at 0 Willow St (Map 26, Lot 50) and 0 Lowell Street (Map 26, Lot 32) located in the upper watershed of the Aberjona River (**Attachment A**, **Figures 2 and 3**). The site is currently owned by the Town of Reading Conservation Commission and maintained by the Town's Trails Committee and through volunteer efforts by abutting residents.

The site is bounded to the north by residential homes along Willow Street, to the west by a Massachusetts Bay Transportation Authority (MBTA) commuter rail line, to the south by the Aberjona River, and to the east by Lowell Street (see **Attachment A**, **Figure 3**). The project site is accessed directly off of Willow Street on the north side of property by an existing asphalt access drive (**Photo 1**) and off of Lowell Street to the east via a cleared pedestrian path (**Photo 2**).

Photo 1 Access Drive off of Willow Street (looking to the southeast) (left); , HW photo (March 2021).

Photo 2. Path Connection to Lowell Street sidewalk (looking to the northeast), HW photo (April 2021).

The existing access drive off of Willow Street is approximately 10 feet wide and extends into the site for maintenance of the existing sanitary line (**Photos 3A and 3B**). The sanitary line consists of an existing 12-inch asbestos cement pipe runs northeast to southwest and underneath the existing MBTA railroad line. There are four sanitary sewer manholes onsite. There is also a 10-inch gas line that exists under the access drive and runs parallel to the railroad, north to south, between Willow Street and underneath the Aberjona River. No other utilities are present on the site.

Photos 3A and 3B. Pole indicating location of 10-inch gas line (view looking north toward Willow Street) (left); open field at the western part of the site (right) with sanitary manhole and boulder (view facing southwest); HW photos (March and April 2021).

The general topography of the project site varies between an elevation of 100 feet (above sea level) at the top of the site near Willow Street to 85 feet at the existing resource areas. The majority of the site is flat and wooded with the exception of the open grassed area on the western portion of the parcel (see **Photo 3B**). The Aberjona River enters the property at Lowell Street via a box culvert (6.5 ft wide by 5.2 ft high) and generally flows straight toward the southwestern portion of the site, and then in a westerly direction until it approaches the MBTA railroad tracks where it then turns to the northwest and flows beneath the railroad through another box culvert (2.6 ft wide by 4.2 ft high).

The site supports an existing dirt trail that connects the Willow Street and Lowell Street access points as well as a dirt trail extending toward the recently installed boardwalk trail coming from Hunt Street. The trail edges are generally defined by laid downed branches (**Photos 4A and 4B**). The site is used primarily by neighborhood residents for active and passive recreation including walking, biking and birding. Parking is not allowed on site.

Photos 4A and 4B. Examples of existing path conditions onsite (left); low boardwalk crossing over the existing Bordering Vegetated Wetland (looking to the east); HW photos (April 2021).

2.1 FEMA Designation

According to the current FEMA Flood Insurance Rate Map (FEMA FIRM) for Middlesex County (Community Panel 25017C0313E, effective June 4, 2010) the project site is mapped within Zone X: *Areas of Minimal Flood Hazard* (**Attachment A, Figures 4 and 4A**).

2.2 State-listed Rare Species Habitat

According to the most recent version of the *Massachusetts Natural Heritage Atlas* (14th Edition, August 1, 2017), the project site does not occur within areas of *Estimated Habitat of Rare Wildlife and Certified Vernal Pools* and/or *Priority Habitat of Rare Species* as designated by the Massachusetts Natural Heritage and Endangered Species Program (NHESP)(**Attachment A,** Figure 5).

2.3 Wetland Resource Areas

The site supports freshwater resource areas, as defined under the Massachusetts *Wetlands Protection Act* (M.G.L. Ch. 131 § 40), its implementing Regulations (310 CMR 10.00), and/or the Town of Reading General Bylaw (Section 7.1) and associated Wetlands Protection Regulations. Resource areas occurring at or near the project site include Bordering Vegetated Wetland (BVW) and inland Bank associated with Aberjona River. Figure 5 (**Attachment A)** depicts the limits of the wetland resource areas as shown on the MassGIS Massachusetts Department of Environmental Protection (MassDEP) wetlands data.

Resource areas were identified and delineated by wetland scientists from Weston & Sampson in November 2020. Field methodologies, regulatory definitions, and a brief description of each resource area encountered are provided in the Wetland Delineation Report prepared by Weston & Sampson dated November 2020 (**Attachment B**).

The BVW occupies the southern and central portions of the site with an irregularly shaped projection extending northward into the rear of the properties along Willow Street in the central portion of the site (see existing conditions plans). The BVW on site is largely characteristic of a forested swamp with red maple (*Acer rubrum*) dominating the canopy, while a mix of European buckthorn (*Frangula alnus*), dogwood (*Swida* sp.), arrowwood (*Viburnum dentatum*), water starwort (*Callitriche palustris*) and occasional highbush blueberry (*Vaccinium corymbosum*) are present in the shrub layer. HW observed occasional clumps of sensitive fern (*Onoclea sensibilis*) at the time of our site visits in April and May 2021. A substantial population of Japanese knotweed (*Fallopia japonica*) dominates the understory in the western portion of the site, and extends into the open field, where persistent management efforts keep this non-native, invasive species at bay during the non-growing season.

Photo 5. Aberjona River in southwestern portion of site near the railroad tracks (view facing approximately southeast, with project site to the left of this view), HW photo (February 2021).

The area to the south of the site is more characteristic of a transitional wet meadow-shrub swamp and is dominated by larger shrubs of grey willow (*Salix cinerea*), alder (Alnus spp.), highbush blueberry, sweet pepperbush, wide-leaf cattail (*Typha latifolia*), various sedges (*Carex* spp.), rushes, and grasses, with scattered clumps and patches of common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) (**Photo 5**). The associated 100-foot buffer zone to the BVW occupies nearly the entire site.

Weston & Sampson also flagged top of bank ("bank") in discontinuous segments due to the nature of the stream. The United States Geographical Survey (USGS) map identifies it as a perennial stream and USGS Stream Stats indicates that it is greater than the 0.5 square mile threshold for a perennial stream. However, this reach of the Aberjona River parcel has been determined by the Conservation Commission to be an intermittent stream due to the seasonal low flows observed under historical conditions. This is documented in the 2019 Order of Conditions (OOC) issued to the Trails Committee (DEP File #270-0719).

The resource areas and the adjacent buffer zone support an abundance of non-native invasive and nuisance or weedy species, the most prevalent of which is Japanese knotweed, found most predominantly in the western part of the site and in areas along the Aberjona River (**Photo 6**). Other invasive species identified include Black locust (*Robinia pseudoacacia*), Norway maple (*Acer platanoides*), common buckthorn (*Rhamnus cathartica*), grey willow (*Salix cinerea*), and a single Amur cork tree (*Phellodendron amurense*). Other non-native species observed at the project site include clumps and individuals of multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), winged euonymus (*Euonymus alatus*), honeysuckle (*Lonicera* sp.), entanglements of Oriental bittersweet (*Celastrus orbiculatus*), and carpets of garlic mustard (*Alliaria petiolata*).

Photo 6. View of wetland area dominated by non-native, invasive Japanese knotweed, HW Photo April 2021.

Native species diversity and abundance is low within resource areas at the project site, and although the adjacent shrub swamp supports a more robust native plant community, HW also observed large patches of common reed, purple loosestrife, and scattered clumps of grey willow).

2.4 Additional Field Assessments

2.4.1 Habitat Assessment

HW ecologists conducted additional field evaluations within the approximate project footprint to assess habitat features as well as the extent of invasive species.

Vegetation at the site consists predominantly of invasive plants, particularly in wetland resource areas and buffer zone, which diminishes the habitat values for local wildlife. Japanese knotweed is the most prevalent invasive plant and is found in both wetland and upland areas at the project site. Evidence of its management was observed in the open field in the western part of the site. In addition, many of the native shrubs have been overtaken by invasive plants.

In addition, HW observed areas of dumping (soil, gravel, rocks, and other debris) in the eastern part of the site adjacent to the river and within the wetland and buffer zone (**Photo 7**). At least a portion of this dumped material will be removed to accommodate the project design.

Photo 7. View of debris piles in southeastern portion of the site ; HW photo (April 2021).

Habitat for local native wildlife at the project site is provided by a small number of native trees including cherry, red maple, and ash. HW observed scattered woody debris, piled rocks, and fallen logs, as well as a few snags (upright dead trees), which provide habitat niches for local wildlife species. HW heard and/or observed many bird species within the adjacent shrub swamp and observed two larger predatory birds within the project site (broad-winged and red-tailed hawks). Habitat features will be preserved to the extent practicable and replaced in kind or equivalent following construction to maintain or improve on-site habitat for resident wildlife. Habitat features will be field located and adjusted following construction and grading but prior to revegetation of the area.

2.4.2 Environmental Assessment

HW also performed a reconnaissance of the site in the location of the project footprint to observe and document existing conditions and indications of potential environmental concerns (e.g., stressed vegetation, stained soil, sheens, odors, solid waste disposal, or oil and/or hazardous materials (OHM). Our findings are summarized below.

- Historical aerial photographs indicate that the Subject Property had been cleared of vegetation prior to 1938 and then again prior to 1952. After 1980, the Subject Property appears to be mostly wooded. The potential exists for fill material from unknown origin to have been used at the Subject Property. The potential use of fill material from an unknown origin is a potential environmental concern.
- A pile (approximately 20 cubic yards) of solid waste including concrete, brick, metal intermixed with soil was observed in the area of disturbance. No visual or olfactory

evidence of OHM was observed on the surface of the pile. The disposal of solid waste with soil from an unknown origin is a potential environmental concern.

- HW recommends that analytical samples be collected for laboratory analysis to determine the extent of OHM (if any) in the area of proposed infiltration including the area with soil from an unknown origin. This information will be important to determine if stormwater infiltration will mobilize any potential OHM. It will also be helpful to determine how the solid waste/soil pile from an unknown origin will be managed.

2.4.3 Soil Borings

HW soil evaluators also conducted four soil borings within the approximate project footprint to support the project design. **Attachment A, Figure 6** shows the locations of the soil borings overlaid on the soil types as mapped by Natural Resources Conservation Service (NRCS). Additional information is provided within the project plans (**Attachment D**) and the Stormwater Report (**Attachment E**).

3.0 PROPOSED PROJECT

The proposed project consists of the following site development improvements:

- Installation of sediment forebays for pretreatment of stormwater runoff;
- Installation of a stormwater constructed wetland system to manage localized flooding and provide enhanced water quality treatment;
- Improvements to the existing access road off Willow Street, and construction of a formalized parking area with additional stormwater treatment;
- Improvements and enhancements to the existing trail system with boardwalks and overlooks;
- Buffer zone enhancements through invasive species management and native landscaping; and
- Installation of interpretive signage to provide educational outreach opportunities.

Details of the proposed project are provided on the attached project plans, entitled “Mystic River Watershed, Maillet Conservation Area, Reading, Massachusetts,” prepared by Horsley Witten Group, Inc., and dated May 2021 (**Attachment D**). A brief overview of each of the proposed project elements is provided below.

3.1 Project Details

3.1.1 Constructed Stormwater Wetland

The proposed constructed stormwater wetland will consist of a series of sediment forebays leading to a series of connected constructed wetland cells with deep, permanent pools and adjacent constructed low marsh and high marsh areas, planted with native species to treat stormwater runoff that is directed to the site from the surrounding watershed.

The existing stormwater infrastructure on Lowell Street, consisting of a 12-inch RCP and 18- to 24-inch RCP, currently drains directly into the Aberjona River via an existing box culvert (6.5-ft wide and 5.2-ft high) on Lowell Street. The total drainage area to this location is approximately

42 acres, with about 10% of the drainage area coming from the northwest (towards the Willow Street intersection) and the remaining stormwater coming from the southeast (towards Town center). The proposed project would redirect runoff (up to the 1-inch water quality event) from the existing box culvert via a series of catch basins and manholes or siphon to a new drain manhole that would be piped into the Maillet Conservation Land.

High flows greater than top of bank elevation (estimated to be at elevation 86.5) from the Aberjona River will be allowed to flood into the Maillet Conservation Land through a graded opening at the bank. Based on recent modeling conducted by AECOM for this stretch of the Aberjona River, the recurrence interval of flows into the constructed stormwater wetland would be roughly once every 50 years.

Flows enter a sediment forebay with a plantable concrete material to provide a maintainable surface. A second sediment forebay is provided to provide additional settling of sediment and debris. Outflow from both sediment forebays exit via an overflow spillway with river stone and curbing to provide even flow distribution. From there, flow enters a system of pools with varied topography to allow for micropools along with low marsh and high marsh vegetation for additional treatment of runoff, particularly dissolved pollutants. Connection between pools across the existing BVW is through a 24-inch reverse sloped pipe. The final two pools are connected across the existing sewer easement through a stone channel which is lined with an impermeable geotextile liner to prevent infiltration into the existing 12-inch asbestos cement pipe.

Each pool has an emergency spillway designed to overflow when the pools exceed a set elevation 12-inches above the permanent pool. For most of the pools the elevation is set at 85.5 except for the final pool which discharges to the Aberjona River which is set at the permanent pool elevation of 84.5.

Runoff from the access road off of Willow Street and the parking area at the bottom of the slope is directed to a sediment forebay with a plantable concrete material that overflows into the constructed stormwater wetland for additional treatment.

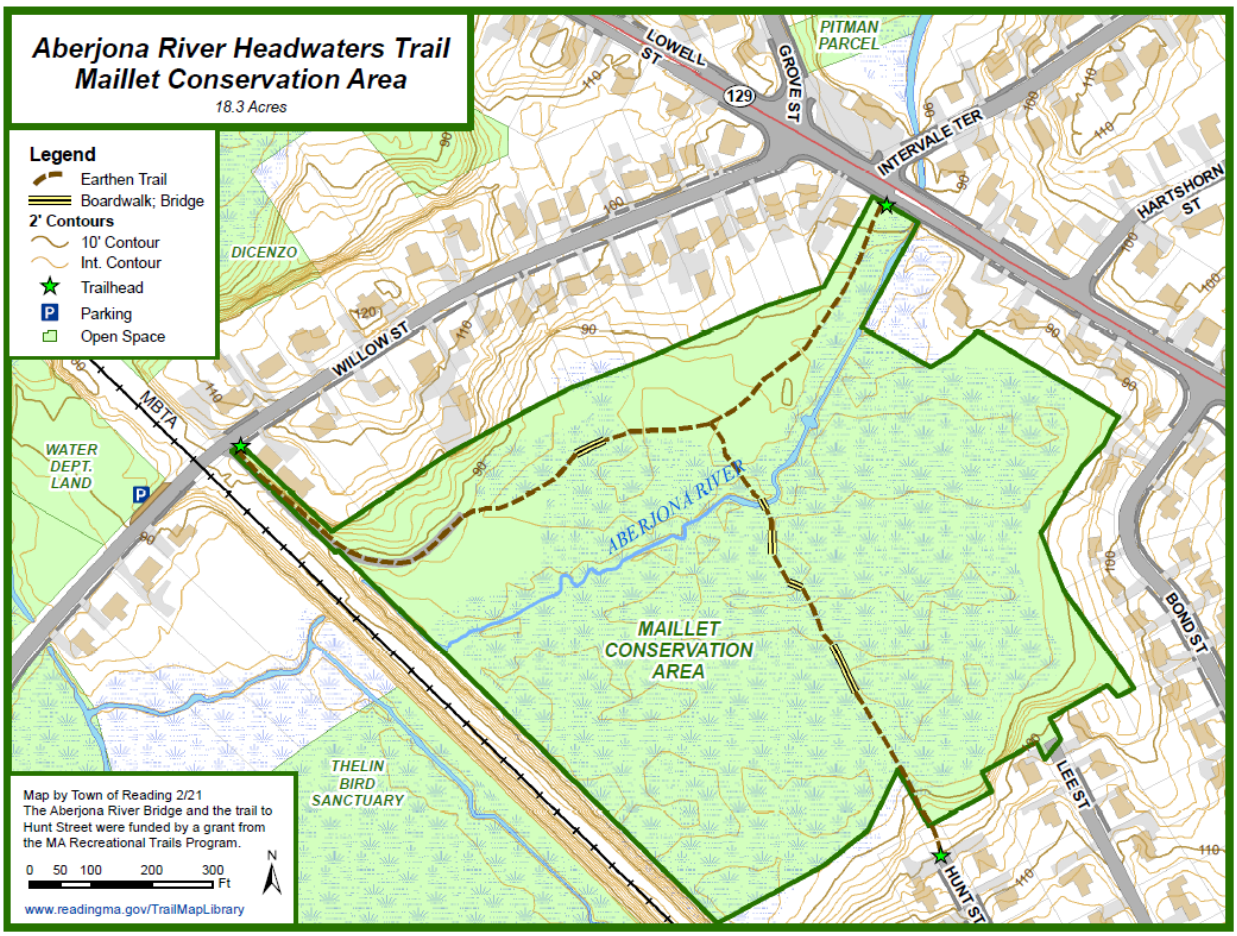
3.1.2 Improved Trail System

The project proposes to create and or reconfigure a series of trails onsite to allow for pedestrians and bicyclists to access the Maillet Conservation Land and connect to adjacent rights-of-way and other open spaces. The map below depicts the Aberjona River Headwaters Trail Maillet Conservation Area showing the existing rail system at this site. The Trails Committee recently completed site improvements in 2019/2020 (under DEP File #270-0719) to reestablish existing trails and provide a low boardwalk across the BVW as well as a boardwalk crossing over the Aberjona River.

The main path will be an ADA-compliant, permeable 8-foot path from the proposed parking lot through the existing bordering vegetated wetland to Lowell Street. The path will have 2-foot grassed shoulders to allow for comfortable passing and space for enjoyment of the existing and constructed wetlands. Additional 5-ft wide mulched paths will create additional loops for pedestrians and mountain bikers to have a more immersive nature experience. Those paths will

be placed to be sensitive to existing trees and vegetation and preserve the natural buffers that exist to the extent possible.

The 8-foot paths will cross over spillways using 8-foot wooden boardwalks with a curb or railings and concrete footings. There is an additional 10-foot wooden boardwalk with a curb or railings across the BVW that is proposed to be on a stone base and sleepers. All boardwalk crossings are designed to be ADA-compliant. Mitigation for the proposed wetland crossing is described below IN Section 4.1 and in **Attachment C**.



3.1.3 Site Amenities

Site access off of Willow Street will be improved by expanding the existing asphalt drive to 16 feet wide. The access drive ends at a large turn around and parking area. Currently, there is space for four parking spaces.

Rock cairns and an informational kiosk would provide a formal entrance to the trail system. Benches will be placed along the trail for seating and overlooks along the path will provide views into the wetlands. Stepping-stones will be placed at one of the overlooks as an interactive feature for children.

Site access off of Lowell Street will be widened to 8 feet and rock cairns will be placed off of the sidewalk at Lowell to formalize the entrance.

Photo 8. Existing access drive onsite (looking to the north), HW photo (March 2021).

3.1.4 Sanitary Sewer Improvements

This project proposes to leave in place the existing 12-inch asbestos cement (AC) sanitary sewer which crosses the BVW in multiple locations along the parcel from Lowell Street to the MBTA railroad. The existing sanitary sewer will be lined (e.g., cured-in-place) and manholes will be adjusted, lined and/or mortared as necessary.

3.2 Alternatives Analysis

The Maillet Conservation Land was identified as one of the 30 top sites considered in the Town of Reading during the FY 2019 MVP Grant study that evaluated opportunities for regional constructed wetlands across the Mystic River Watershed. Several hundred sites were identified and prioritized during the study, which resulted in 35 priority sites across the watershed. The top six sites were selected for further study under the FY 2021 MVP Grant, which included sites in the towns of Reading, Lexington, and Arlington and the cities of Woburn, Everett, and Medford. The Maillet Conservation Land was identified as a top site for design after extensive field evaluations were completed on soil and groundwater conditions, contributing drainage areas, invasive and native plant and tree species, and wildlife habitat.

During the course of project planning and design process, the Town in conjunction with the Mystic River Watershed Association (MyRWA) explored several alternatives of the proposed project in order to avoid and minimize impacts within wetland resource areas while still resulting in viable project that met the project purpose and need. Nearby sites, including the open space to the south of the Aberjona River, were considered as viable alternatives. On-site alternatives included various configurations and types of stormwater management and explored different trail routes as well as different materials to minimize disturbance to the existing resource areas. Following input from Town departments and public input, the proposed project is the preferred alternative. A discussion of the design alternatives considered follows.

3.2.1 No Build Alternative

The No-Build Alternative, while not resulting in impacts to wetland resources, would not meet the project purpose of providing open space improvements to meet the needs of the residents in the Town or meet the goals of the Town's Open Space and Recreation Plan. These goals include, but are not limited to, accessible trail systems; stormwater management for local drainage to improve water quality; and site amenities for both active and passive recreation including benches and overlooks.

The no build alternative would allow stormwater runoff to continue to discharge sediment and nutrients into the Aberjona River untreated. Further, the trail systems would not be improved which limits the accessibility of the site and the connectivity of the site to other open spaces in the Town.

3.2.2 Off-site Alternative

The Town considered 30 sites as part of the broader study conducted as part of the FY 2019 MVP Grant. Other open space and conservation lands were considered, including the parcel to the southeast of the Maillet Conservation Land. However, that site and several of the other Town sites, had either significant resource areas onsite or were not in locations that would provide a significant local and/or regional benefit to either address flooding or water quality. Further, several sites did not meet the goals of the Town for improving open space and/or providing connectivity between open space locations.

3.2.3 Alternative Project Designs

The original concept was designed to be placed directly within the BVW/Freshwater Wetland, with wetland replication being provided for disturbed areas. The concept design provided an accessible looped path with a boardwalk crossing for pedestrians. A larger parking lot and access path from Willow Street were proposed. The sanitary sewer line would be moved to the north further away from the Aberjona River. This concept would have resulted in a significant impact to the existing wetlands, loss of tree canopy and wildlife habitat and altered the hydrology of the site.

A second design discussed using upland areas only for treatment of stormwater and path improvements with no changes to the crossing or impact to the wetland. Stormwater runoff from the access path and parking area would be treated on the southwestern portion of the property while the drainage from Lowell Street would be treated on the northeastern portion of the

property. Trail improvements and site amenities would be limited to those areas only. This design minimizes impact to the existing resource areas, trees and wildlife habitat but does not meet the Town's goals of addressing local flooding, water quality, accessibility and connectivity between open spaces.

3.2.4 Preferred Alternative and Proposed Project

The proposed project and preferred alternative avoids and minimizes resource area impacts, while still meeting the project purpose. The constructed stormwater wetland was designed to have the forebays and pools in the upland areas only to reduce impact to the BVW. Further the grading design was sensitive to the large diameter trees that exist onsite and the associated canopy that they provide for both pedestrians and wildlife. The proposed connections to stormwater drainage infrastructure on Lowell Street as well as the Aberjona River maximize the treatment of stormwater and flood waters. Finally, the proposed micropools, deep marsh and shallow marsh vegetation along with upland seeding and plantings will consist of native species. These plantings, along with invasive species controls, will help to restore the existing conservation area to be a healthy, thriving habitat for wildlife.

The approximately 110 LF of the proposed trail that traverses the BVW will consist of an elevated boardwalk, with the only direct impacts from the sleepers. The boardwalk will be placed over the proposed 24-inch reversed slope pipe to further reduce the impacts to the BVW. The optimal location of the boardwalk is just to the north of the existing boardwalk to minimize the amount of BVW disturbed. The existing boardwalk area and path connections will be restored as part of this project.

The proposed trail system will allow users of all abilities and interests use and enjoy the site for either passive or active recreation. Benches, overlooks and other contemplative areas allow for enjoyment of the existing and constructed wetlands and reflect the needs of the residents based on feedback gathered during the public engagement process.

3.3 Affected Jurisdictional Areas

The majority of the project will occur within the buffer zone to the BVW, and resource area impacts have been avoided and minimized to the extent practicable. However, a portion of the proposed project will traverse the finger-like projection of BVW in the central portion of the site in order to connect the constructed wetland cells across the site. Due to the nature and extent of the proposed project, work will also occur within the Town's 25-foot Zone of Natural Vegetation (ZNV) and the 35-foot "no structures" buffer zone. Mitigation for work within these areas is described below and in the attachments. The Town will seek a variance pursuant to Section 2.E of the Reading Wetlands Protection Regulations to allow the project to move forward as proposed, due to the overriding public benefits associated with the project.

The total limit of work at this site is approximately 122,142 SF or 2.8 ac. **Table 1** summarizes both the temporary (removal of vegetation, shading) and permanent (fill) impacts to jurisdictional resources. These jurisdictional areas are regulated under the Massachusetts Wetlands Protection Act and the local bylaw. A discussion of how the proposed project is designed to meet the performance standards follows.

Table 1. Summary of Resource Area Impacts

Jurisdictional Area	Impacts (SF)	(ac)
BVW (net alteration upon restoration)	711	0.016
Buffer Zone*		
0-25 foot ZNV	35,592	0.82
0-35 foot No Structures Zone	49,971	1.15
25-100 foot buffer zone	43,213	0.99
35-100 foot buffer zone	57,592	1.32
Total Buffer Zone Alteration 0-100 feet	78,805	1.81

** Please note that several of the buffer zones overlap and that impacts are not additive.*

4.0 PROTECTION OF RESOURCE AREA INTERESTS

4.1 Bordering Vegetated Wetland – Wetland Replacement and Restoration

As noted, a small amount of wetland alteration will occur to allow the proposed constructed stormwater wetland system to be constructed. Given the configuration of the wetland area, which occupies the central portion of the site, impacts to the BVW are unavoidable. The project design and configuration avoid and minimize these impacts to the extent practicable but are necessary to maintain a continuous flow between constructed stormwater wetland cells. This will require the installation of a 24-inch pipe between constructed wetland Cells 1 and 2. The proposed pipe crosses the wetland between flagging stations A21 and A11, just north of the existing boardwalk crossing. Due to the somewhat curved configuration of the existing wetland crossing, it was determined that reuse of this already disturbed area was infeasible.

Installation of the pipe will result in temporary alterations within the BVW; the proposed new boardwalk path will be elevated above the BVW within the extent of the pipe corridor with direct impacts associated with sleeper footings.

The wetland replacement and restoration plans are designed to address the following performance standards under as stated in 310 CMR 10.55(4) as well as the provisions under Section 3.C.3 (a-g) under the local bylaw. A total of 711 SF of BVW will be mitigated through a 1,000 SF wetland replacement area adjacent to flagging stations A22 and A23, as well as restoration and revegetation of the existing boardwalk crossing (approximately 500 SF) to provide a greater than 2:1 mitigation ratio for impacts to BVW.

The Town will revegetate temporary, construction related disturbance to the wetland soils using a native wetland seed mix and will provide both wetland replacement as well as wetland restoration as described in **Attachment C** and shown on the project plans.

Wetland replacement and restoration activities will generally include the removal of existing vegetation and soils and debris within the footprint of the wetland replacement area, regrading

and establishment of a connection to the existing wetland, introduction of high-organic content soils, introduction of coarse woody debris or boulders to improve habitat diversity, stabilization of disturbed soils with native seed mixes, and revegetation of wetland area with native plants to provide for a 75% native plant community within impacted areas after two growing seasons (as required under 310 CMR 10.55(4)(b)(6)). A qualified professional (Wetlands Specialist) will oversee all phases of the wetland restoration efforts to ensure that requirements set forth in the proposed plan are met (see **Attachment C** and on Sheets L-8 and L-9 of the project plans). This individual will also be granted the discretion to make slight field adjustments to ensure wetland replacement success, with the Town's approval. Restoration efforts will largely involve slight regrading and revegetation of the existing disturbed portion of wetland.

Photo 9. Alternate view of exiting boardwalk crossing (view facing approximately west) (left). The proposed culvert connecting the two constructed wetland cells will occur just north of this location, as show in the yellow dotted line (right).

4.2 Limited Project

The project is also filed as a limited project under the provisions at 310 CMR 10.53(3)(j), which state:

> *The construction and maintenance of catwalks, footbridges, wharves, docks, piers, boathouses, boat shelters, duck blinds, skeet and trap shooting decks and observation decks; provided, however, that such structures are constructed on pilings or posts so as to permit the reasonably unobstructed flowage of water and adequate light to maintain vegetation*.

The Town has previously successfully permitted a limited project wetland crossing at this site (under DEP File # 270-0719). The preferred alternative project has been designed to avoid and minimize alterations within the resource areas while still meeting the project purpose.

Approximately 110 LF of the proposed access trail will traverse the BVW/Freshwater Wetland. Direct resource area impacts (associated with footings) have been minimized through the use of an elevated boardwalk where the proposed pathway traverses the wetland. The elevated

boardwalk portions of the pathway will be constructed of wooden decking spaced apart to allow for some sunlight penetration to vegetation beneath. All construction-related temporary impacts will be restored upon completion of that portion of the pathway, and all construction staging areas will be located outside of wetland resource areas.

4.3 Erosion and Sedimentation Control

The Town proposes to protect adjacent resource areas beyond the limit of work by implementing a sedimentation and erosion control program. Silt socks are proposed at the limit of work along the downgradient edges of the area of disturbance. Disturbed areas will be stabilized with seeding as soon as possible to minimize erosion and sedimentation and will be planted with native vegetation compatible with native species found at the site.

The contractor will be required to establish erosion controls prior to beginning any other project-related work. It is the contractor's responsibility to monitor and correct erosion control practices throughout the duration of the project. Erosion control measures will remain in in place and maintained in good condition until the project reaches completion as directed by the project engineer or landscape architect.

4.4 Stormwater Management

The proposed project is primarily a stormwater management and has been designed to meet the stormwater requirements under the Massachusetts Stormwater Management Standards and the performance standards at 310 CMR 10.05(6)(k).

The proposed constructed stormwater wetland will consist of a series of sediment forebays leading to a series of connected constructed wetland cells with deep permanent pools and adjacent constructed low marsh and high marsh areas that will be planted with native species to treat stormwater runoff that is directed to the site from the surrounding watershed. The proposed constructed stormwater wetland system will redirect stormwater runoff and treat up to the 1-inch water quality event. The proposed stormwater design is discussed above in Section 3.1.1 and details of the proposed stormwater design are provided in the Stormwater Management Report (see **Attachment E**).

4.5 Protection of Local Buffer Zone

Due to the configuration of the wetland, the 100-foot buffer zone occupies the large majority of the project site. As noted, in order to meet the project objectives, the proposed project will necessarily occur within the within the Town's 25-foot Zone of Natural Vegetation (ZNV) and the 35-foot "no structures" buffer zone both associated with the proposed wetland crossing and the project design in order to maximize the stormwater treatment and water quality benefits.

The Town will seek a variance pursuant to Section 2.E of the Reading Wetlands Protection Regulations to allow the project to move forward as proposed, due to the overriding public benefits associated with the project.

4.6 Protection of Wildlife Habitat

The existing wildlife habitat values at the site are diminished due to the prevalence of non-native invasive plant species. Regrading and revegetation of the site associated with the project design will allow for opportunities to not only revegetate disturbed areas with native plant species that will provide better habitat than the areas currently dominated by non-native species, but will provide for opportunities to incorporate wildlife features such as fallen logs or standing dead snags, as well as brush piles and/or rock piles to replace the limited habitat features observed at the site that may be lost as a result of the project. These features will be incorporated during construction with oversight from a landscape and/or wetlands professional.

As discussed further below, the project will also adhere to the Commission's Replacement Tree and Shrub Schedule to the extent practicable and will manage invasive species at the site to establish and maintain a more native plant community in the long term, which in turn will be beneficial to providing an established native vegetation community to support local wildlife species.

4.7 Reading Tree Policy

As notes, the proposed project is designed to address the Conservation Commission's Replacement Tree and Shrub Policy to the extent practicable. The project footprint will remove a portion of the existing vegetation, including non-native species, while also avoiding and minimizing tree removal. The replacement schedule requires a 1:1 replacement of tees with trees with a slightly greater replacement ratio when replacing lost trees with shrubs. A total of 56 deciduous trees greater than 6-inches DBH will be removed to accommodate the project. **Table 2** describes the proposed replacement plantings.

The Town proposed a total of 61 replacement trees (both deciduous and evergreen), 90 replacement shrubs, and 23,735 planting plugs. All replacement plantings are native. While the quantities of proposed replacement plantings exceed the number of lost trees, the sizes do not exactly match the Commission replacement schedule. However, it is our experience that planting larger numbers of somewhat smaller trees and shrubs have a greater chance of establishment and survival. The Town respectfully requests that the Conservation Commission take into consideration the overriding project benefits of water quality and localized flood management, as well as the proposed revegetation schedule, and find that the proposed plantings would meet the intent of the Commission's Replacement Tree Policy.

Table 2. Proposed Replacement Schedule for Trees

Qty	Type	Size	Approx. Height	Notes
31	Deciduous Shade Tree	1-1.5" cal.	N/A	61 total replacement trees
7	Deciduous Shade Tree	8-10' ht.	8-10 feet tall	
16	Deciduous Shade Tree	5-8' ht.	5-8 feet tall	
7	Evergreen	8-10' ht.	8-10 feet tall	
31	Shrub	#3 cont.	1-3 feet tall	90 total replacement shrubs
59	Shrub	#5 cont.	2-4 feet tall	
23,735	Perennial / Grass	Plug	N/A	

4.8 Invasive Species Management

As noted, the existing vegetation at this site is dominated by non-native invasive species. **Table 3** lists the species observed. Proposed management of these species is discussed in detail within the Operations and Management Plan (see **Attachment E**) and will involve a combination of mechanical and chemical (herbicide) methods to manage existing invasives on site, with an aggressive revegetation plan to restore a more native plant community.

While the Town is in the process of updating its Open Space and Recreational Plan (OSRP), the Current OSRP (2013) identifies the management of invasive species as one of the OSRP goals. As such, the project will address both this goal as well as provide for improvements

Table 3. List of Non-native Invasive Plant Species at Project Site and MIPAG Status

Common Name	Latin Name	MIPAG Status*
TREES		
Black Locust	*Robinia pseudoacacia*	Invasive
Norway Maple	*Acer platanoides*	Invasive
Common Buckthorn	*Rhamnus cathartica*	Invasive
Grey Willow	*Salix cinerea*	Invasive
Amur Cork-tree	*Phellodendron amurense*	Likely Invasive
SHRUBS		
Multiflora Rose	*Rosa multiflora*	Invasive
Japanese Barberry	*Berberis thunbergii*	Invasive
Burning Bush	*Euonymus alatus*	Invasive
Shrub Honeysuckle	*Lonicera* spp.	Invasive, Likely Invasive, or Potentially Invasive
Crab Apple	*Malus* spp.	Not Listed
VINES		
Asiatic Bittersweet	*Celastrus orbiculatus*	Invasive
HERBACEOUS		
Garlic Mustard	*Alliaria petiolata*	Invasive
Japanese Knotweed	*Fallopia japonica*	Invasive
Common Reed	*Phragmites australis*	Invasive

** MIPAG = Massachusetts Invasive Plant Advisory Group*

Attachment A – Figures

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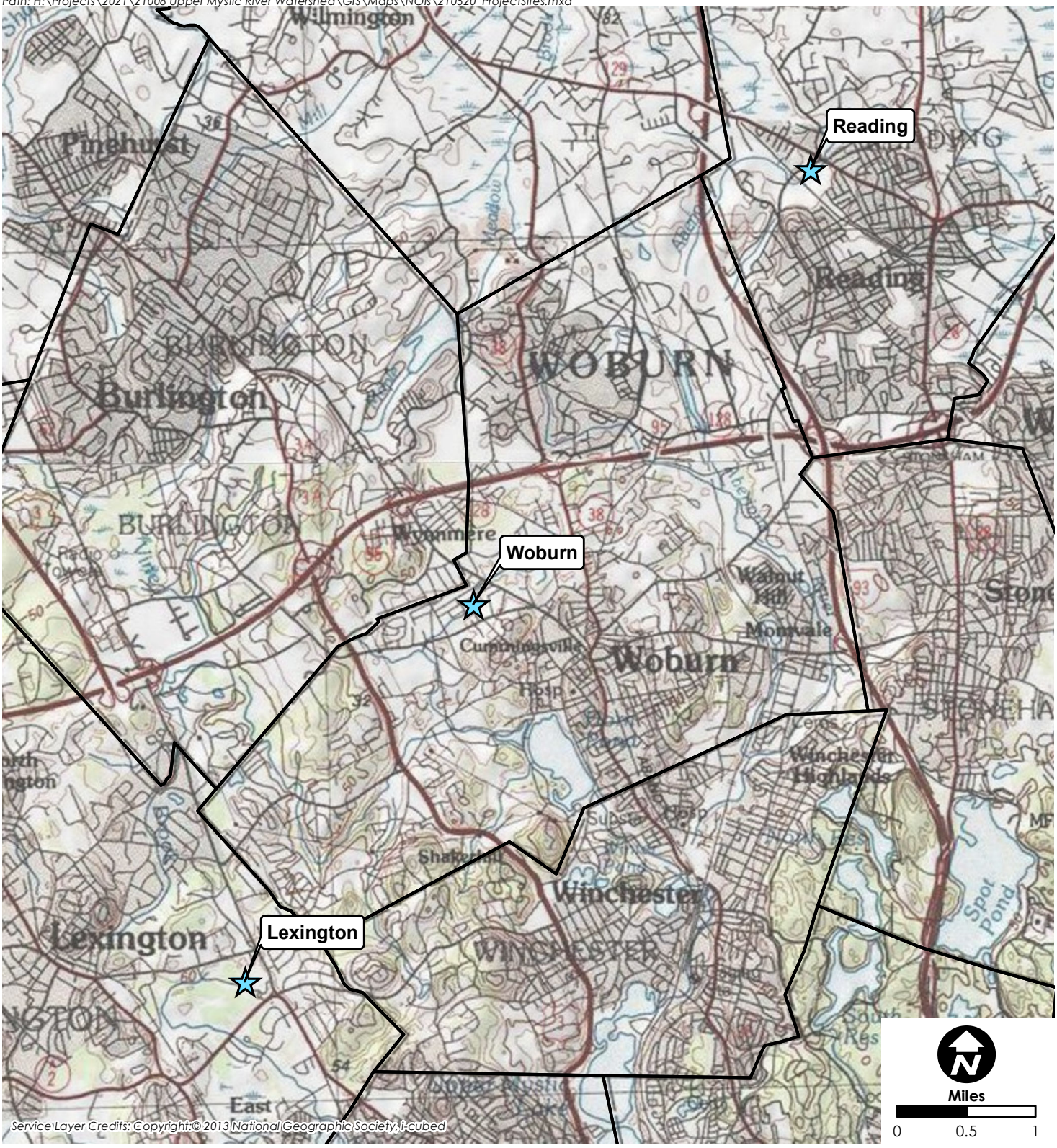

Date: 2/19/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Priority Project Site

Municipal Boundary

Mystic River Watershed
Lexington, Woburn, and Reading

Figure 1
Priority Project Sites

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Date: 5/20/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Project Location

Municipal Boundary

Mystic River Watershed
Town of Reading - Maillet Conservation Area

Figure 2
USGS Locus Map

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Path: H:\Projects\2021\21008 Upper Mystic River Watershed\GIS\Maps\NOIs\210601_LexingtonAerial_Topo.mxd

Date: 6/1/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Limit of Work
Parcel Boundary (MassGIS)

Elevation (NAVD88)*
Major Contour (10' interval)
Minor Contour (2' interval)

**Derived from 2013-2014 LiDAR*

Mystic River Watershed
Town of Lexington - 0 Lowell Street & 0 Maple Street

Figure 3
Aerial Locus Map

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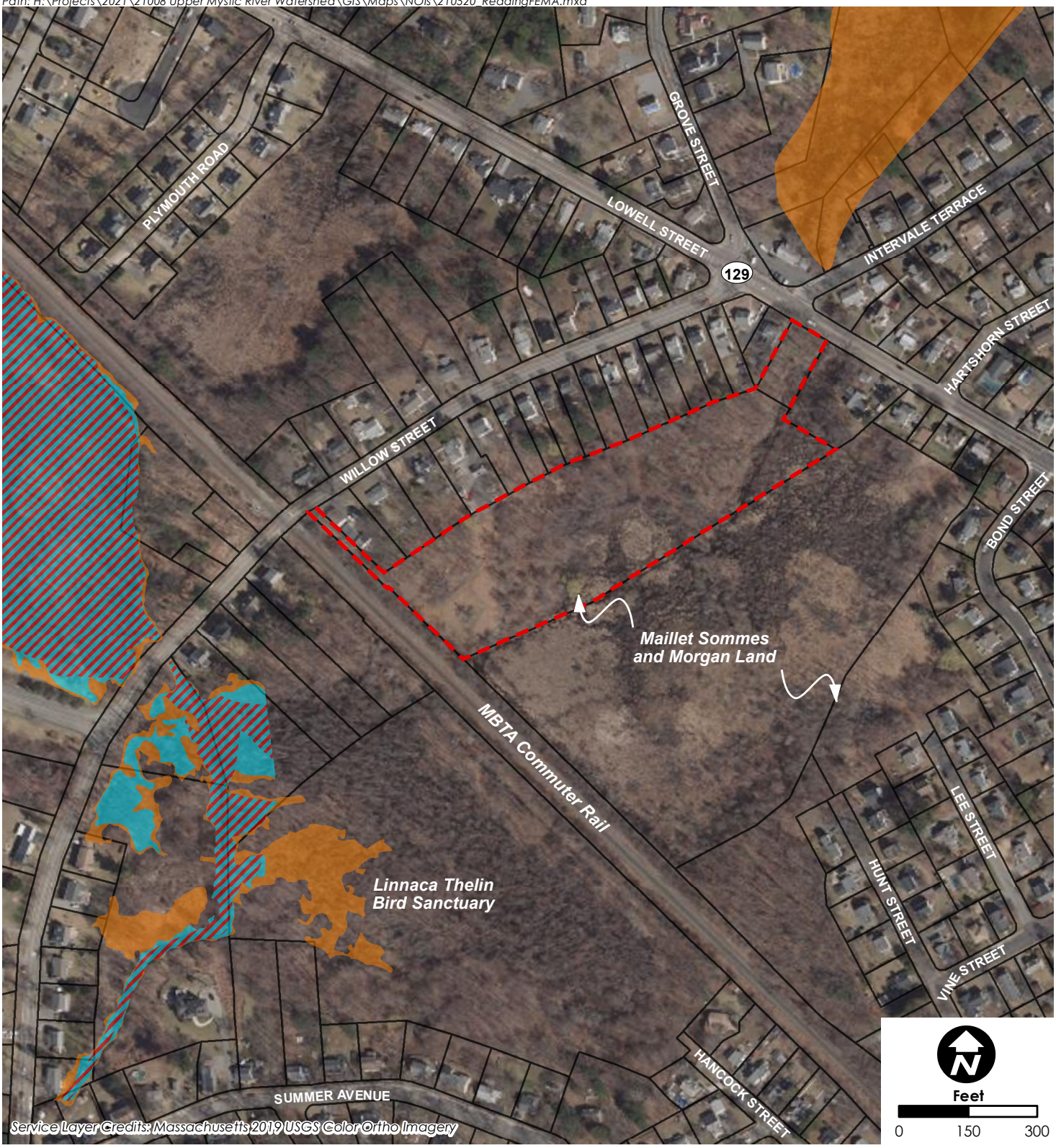
Path: H:\Projects\2021\21008 Upper Mystic River Watershed\GIS\Maps\NOIs\210520_ReadingFEMA.mxd



Date: 5/20/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

General Project Extent
Parcel Boundary (MassGIS)

FEMA National Flood Hazard Layer
Zone AE: 1% Annual Chance of Flooding, with BFE
Zone AE: Regulatory Floodway
Zone X: 0.2% Annual Chance of Flooding

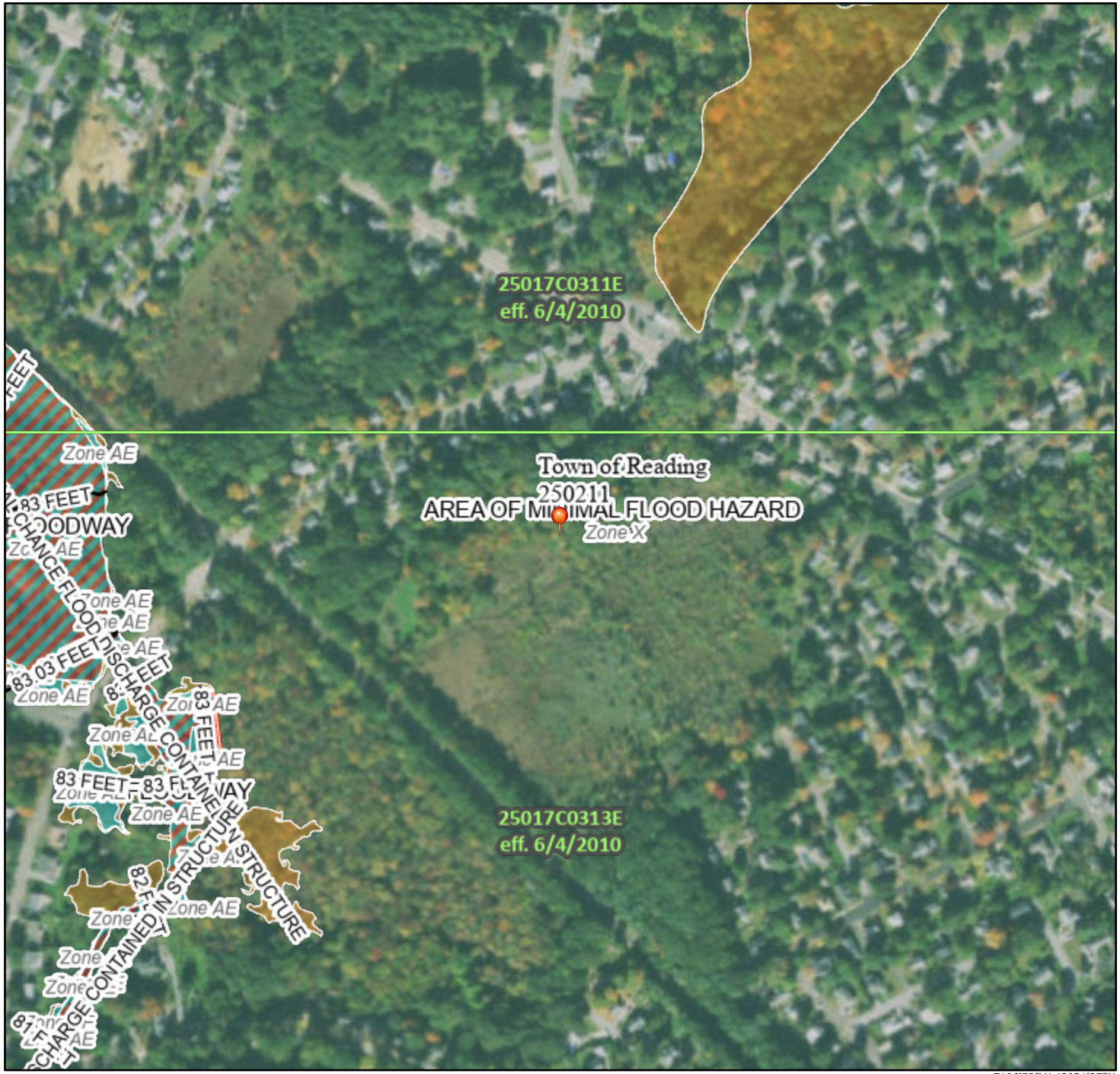
Mystic River Watershed
Town of Reading - Maillet Conservation Area

Figure 4
FEMA Flood Zones

National Flood Hazard Layer FIRMette

FEMA

71°7'30"W 42°32'3"N



71°6'52"W 42°31'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/27/2021 at 12:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 4A

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Path: H:\Projects\2021\21008 Upper Mystic River Watershed\GIS\Maps\NOIs\210520_ReadingConstraints.mxd

Date: 5/20/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

- General Project Extent
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools

Wellhead Protection Areas
- DEP Approved Zone II

DEP Wetlands (2005)
- Hydrologic Connection
- Marsh/Bog
- Wooded marsh
- Open Water

- Article 97 Land
- Protected Open Space

Mystic River Watershed
Town of Reading - Maillet Conservation Area

Figure 5
Environmental Constraints

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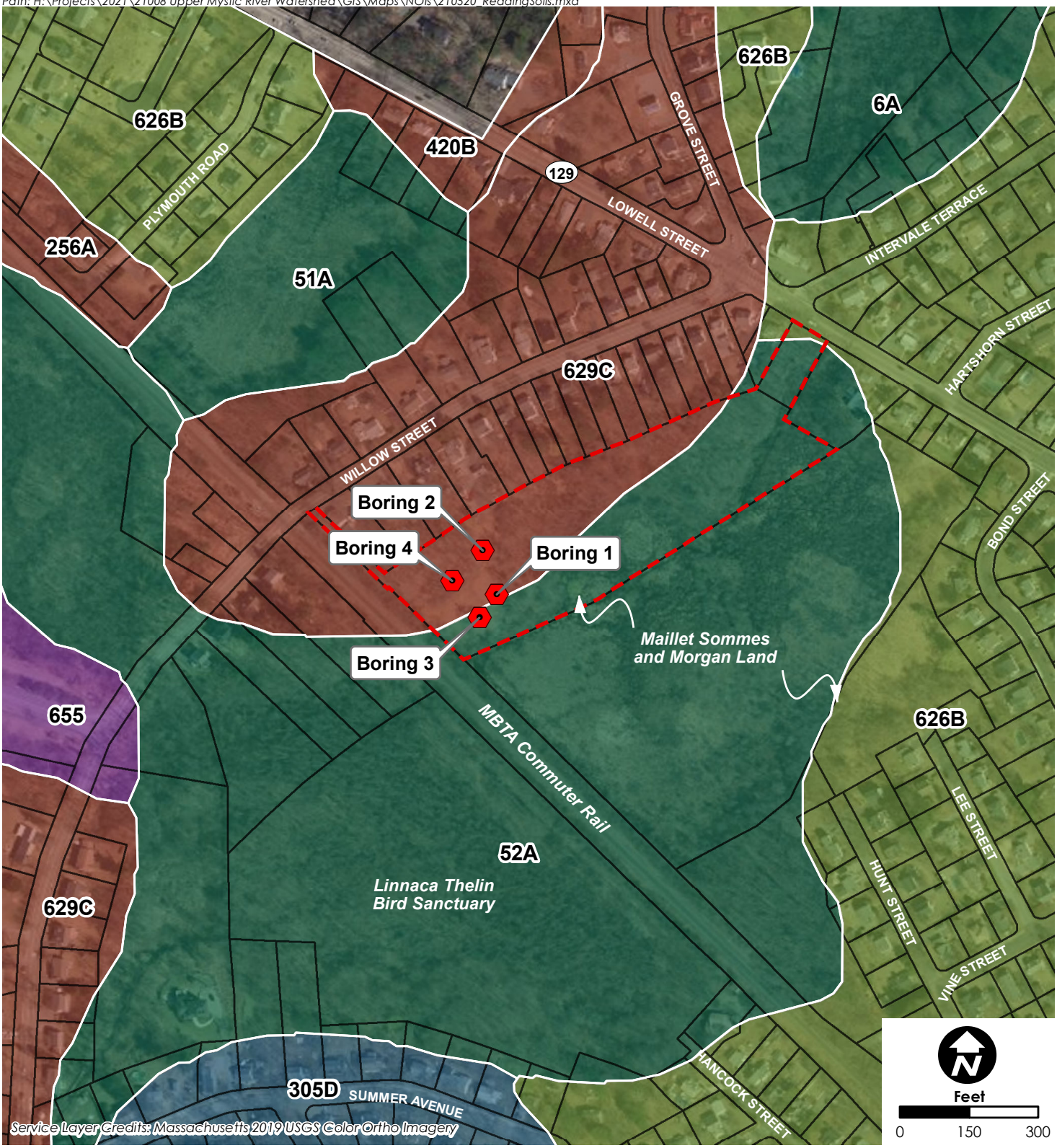

Date: 5/20/2021
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Soil Boring Location
General Project Extent
Parcel Boundary (MassGIS)

NRCS SSURGO-Certified Soils (Map Unit)
Hydrologic Group
Udorthents
A
B
C
D

Mystic River Watershed
Town of Reading - Maillet Conservation Area

Figure 6
Middlesex County Soils

Attachment B – Wetlands Report

Weston & Sampson

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

Wetland Delineation Report

November 2020

Reading, Massachusetts
Project # ENG20-1008

Maillet, Sommes & Morgan Land
Reading, MA

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FIGURES

APPENDICES

1.0 SITE DESCRIPTION

On November 18th, 2020, the presence of wetland resources was investigated near the Maillet, Sommes & Morgan Land in Reading, MA. This investigation area was located in existing conservation land and adjacent to the MBTA commuter rail and residential properties. Please see Figure 1 (Wetlands Field Map) and Figure 2 (USGS Topographic Map) of this report for the investigation area.

Wetland resource areas including a bordering vegetative wetland and a perennial stream, were identified and flagged in the field using pink flagging by a Weston & Sampson employee who is trained in the wetland delineation process using the Massachusetts Department of Environmental Protection (MassDEP) and the US Army Corps of Engineers methodology. A further description of these wetland resource areas are presented in the following sections.

2.0 DELINEATION OF WETLAND RESOURCES

2.1 Site Observations

The Weston & Sampson wetland scientist, trained in the ACOE Wetland Delineation Manual and Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act guidance document, observed the following protected wetland resources at the site:

- Bordering Vegetated Wetland (BVW)
- Bank – Perennial Stream

Field data were recorded on ACOE Wetland Determination Data Forms. See Appendix A for completed data forms and Appendix B for site photographs.

2.2 Wetland Delineation Methodology

Wetland delineation assessment was conducted in accordance with the Massachusetts Wetland Protection Act Regulations (310 CMR 10.55(2)(c)), Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Protection Act (March 1995), and ACOE Wetland Manual (Technical Report Y-87-1).

The bordering vegetated wetlands (BVW) delineation methodology included the characterization of vegetation, soil any hydrologic conditions in both wetland and upland areas to identify the transitional area, which was used as the wetland limit. Pink flags with distinct flag numbers are left in the field to show wetland resource area limits.

Vegetation, hydrology and soils are assessed in both wetland and upland areas to accurately place the wetland limits at each site. The percentage of vegetative species was estimated by creating sample plots. Sample plot radius for trees, saplings, shrubs, groundcover and woody vine strata was 30', 15', 15', 5' and 30', respectively. After creating the sample plot areas, the percent basal area coverage of each species within the monitoring plot was recorded. Using these field observations, the percent dominance of each species within its stratum was calculated. The 50/20 Rule was then used to determine dominance. Dominant species were considered the most abundant plant species (when

ranked in descending order of abundance and cumulatively totaled) that immediately exceeds 50% of the total dominance measure (basal area) for the stratum, plus any additional species comprising 20% or more of the total dominance measure for the stratum. Once the dominant species were determined, they were treated equally to determine the presence of hydrophytic vegetation. If the number of dominant species with a Wetland Indicator Status of FAC (excluding FAC-), FACW or OBL is greater than, or equal to, the number of remaining dominant species, the area was considered a jurisdictional wetland resource area based on vegetation.

A soil sample from each wetland sample plot is also taken. Each soil sample goes to a depth of at least 12-24 inches. The soil is characterized to determine if the soil sample is considered a hydric (wetland) soil. Soil samples, including mottles, are characterized based on color using Munsell Soil-Color charts as a color reference.

The general area is then assessed for hydrologic conditions, including, but not limited to, site inundation, depth to free water, depth of soil saturation, water marks, drift lines, sediment deposits, water stained leaves.

2.3 Bordering Vegetated Wetlands (BVW)

A single BVW series was delineated at the site. The limit of the BVW resource areas was determined by locating the transitional area between wetland and upland vegetation, soils and hydrologic conditions. Wetland flags left in the field included:

- BVW-A1 through BVW-A36 (BVW "A" Series)

Dominant vegetation within the wetland resource area included red maple (*Acer rubrum*), redosier dogwood (*Cornus sericea*), tussock sedge (*Carex stricta*), and purple loosestrife *(Lythrum salicaria)* species that generally thrive in wet conditions. Soils within the BVW's were composed of a thick organic layer. Other indicators of wetland hydrology included surface water, high water table and saturation.

Dominant upland vegetation in the area included northern red oak (*Quercus rubus*), and glossy buckthorn (*Frangula alnus*). Soils within the upland were composed of fine sandy loam, with no evidence of mottling or hydrology within the top 18 inches.

A 100-foot buffer zone is associated with the BVW resource area.

2.4 Bank

Water bodies, including perennial streams, intermittent streams, ponds and lakes, have banks which are protected by the Massachusetts Wetland Protection Act. Bank is a wetland resource area defined by 310 CMR 10.54(2)(a) as "the potion of land surface which normally abuts and confines a water body. It occurs between a waterbody and a vegetated bordering wetland and adjacent floodplain, or, in absence of these, it occurs between a waterbody and an upland." Vegetated banks provide valuable functions such as flood control, stormwater prevention, fisheries protection, and water quality protection. The limit of this resource area is identified by Top of Bank (TOB) which is located at the first observable break in slope or the Mean Annual Flood Level (MAFL), whichever is lower. TOB is easily identified in the field so that indicator was utilized for this wetland delineation.

Perennial Stream Banks

A single perennial stream known as the Aberjona River was identified within the investigation area. The boundary of the perennial stream was identified in the field utilizing Top of Bank (TOB), identified by flag line TOB-A. This flag line was discontinuous along the same perennial stream due to deep mud in the adjacent BVW which made access to the stream banks impossible along portions of the reach. The Aberjona River is shown as perennial on the current United States Geographical Survey (USGS) map, and has a watershed size greater than 0.5 square miles in size according to USGS Stream Stats which classifies the stream as perennial per 310 CMR 10.58 (2)(a)(1)(b-c). The boundary of the perennial stream was identified in the field by the first observable break in slope (TOB). Wetland flags left in the field included:

- TOB-A1 through TOB-A16 (Perennial Stream Bank "A" Series)

Perennial streams are subject to a 200ft Riverfront Area under the Massachusetts Wetland Protection Act per 301 CMR 10.58(2)(a)(2)(c).

2.5 Other Protected Areas

Weston & Sampson created environmental resources maps (see Figure 4) of the site to determine the presence of other protected areas. The data source of these map layers was the Massachusetts Geographic Information System (MassGIS). These areas included:

- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- NHESP Certified and Potential Vernal Pools
- Areas of Critical Environmental Concern (ACEC)
- Outstanding Resource Waters (ORW)

Wetland resources identified in the field were also added to these maps. Based on the MassGIS information, the site is not located within ACEC boundaries, and is not a NHESP Priority Habitats of Rare Species, and not NHESP Estimated Habitat of Rare Wildlife. Therefore, there are no protected areas other than the bordering vegetative wetland and perennial stream bank resource areas previously identified above.

FEMA Flood Insurance Rate Maps (FIRM) were created online from the FEMA website to determine if there is a 100-year flood zone at the site. See Figure 3 for FIRM map. Based on FEMA flood maps the investigation area is not located within the 100-year flood zone.

3.0 SUMMARY

On November 18th, 2020, the presence of wetland resources was investigated near the Maillet, Sommes & Morgan land, in Reading, MA. A single bordering vegetative wetland and a single perennial stream was identified and flagged at the site.

Additional environmental mapping was conducted using MassGIS data layers and FEMA FIRM mapping. This additional mapping indicates that the site is not located within ACEC boundaries, and is not a NHESP Priority Habitats of Rare Species, not NHESP Estimated Habitat of Rare Wildlife, and not located within the 100-year flood zone.

This Wetlands Delineation Report has been reviewed and approved by a Certified Wetland Scientist (CWS).

4.0 REFERENCES

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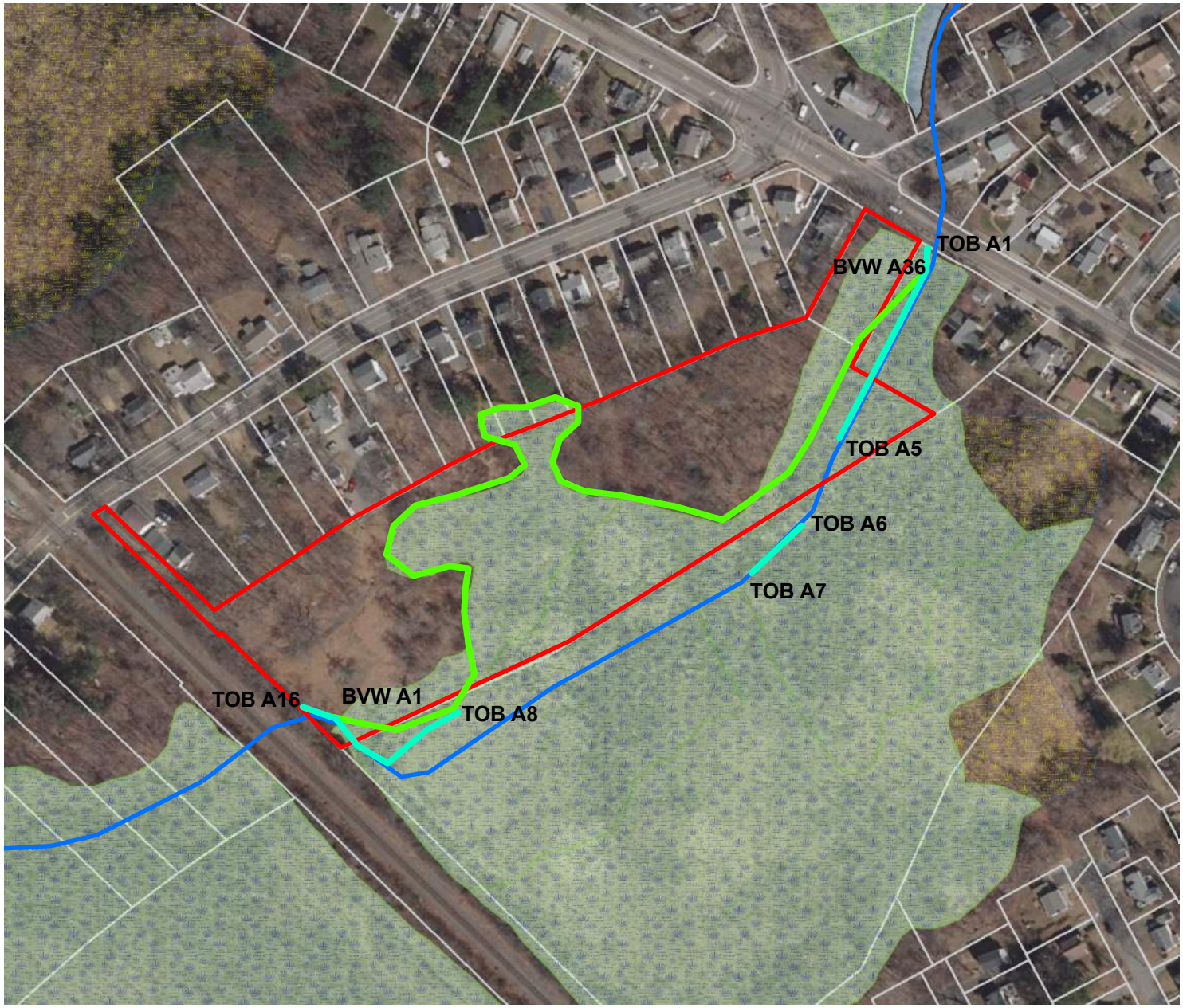


N
W E
S

200 100 0 200
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

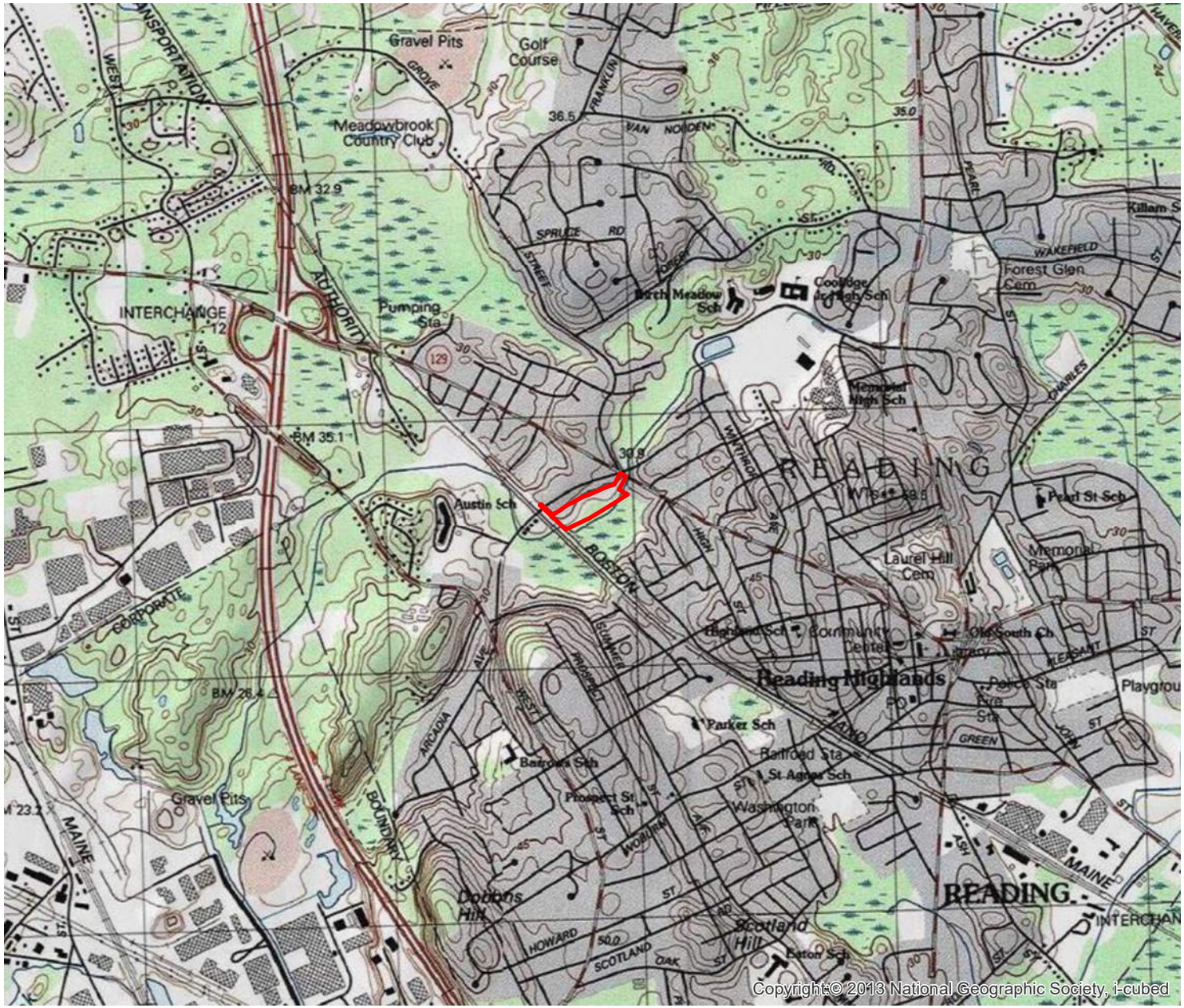
- Perennial Stream Bank
- Bordering Vegetated Wetland
- Investigation Area
- Perennial Stream
- Intermittent Stream
- Marsh/Bog
- Wooded marsh
- Cranberry Bog
- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune
- Parcel
- Parcel

FIGURE 1

Maillet, Sommes and Morgan Land
Reading MA

Wetlands Field Map

Weston & Sampson



N
W E
S

1,000 500 0 1,000
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

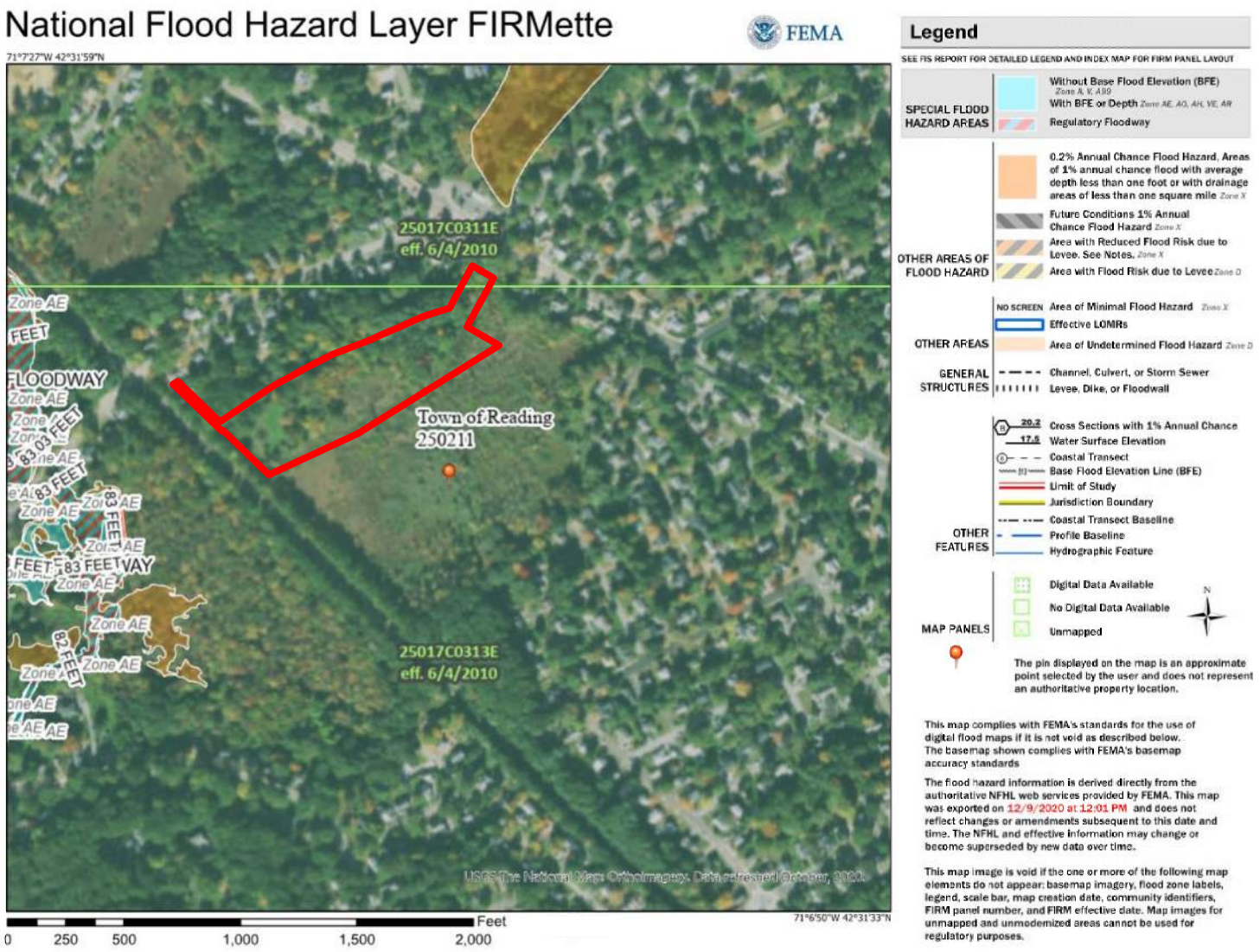
Investigation Area

FIGURE 2

Maillet, Sommes and Morgan Land
Reading MA

USGS Topographic Map

Weston & Sampson



Legend

Investigation Area

FIGURE 3

Maillet, Sommes, & Morgan Land
Reading, MA

FEMA Map

Weston & Sampson

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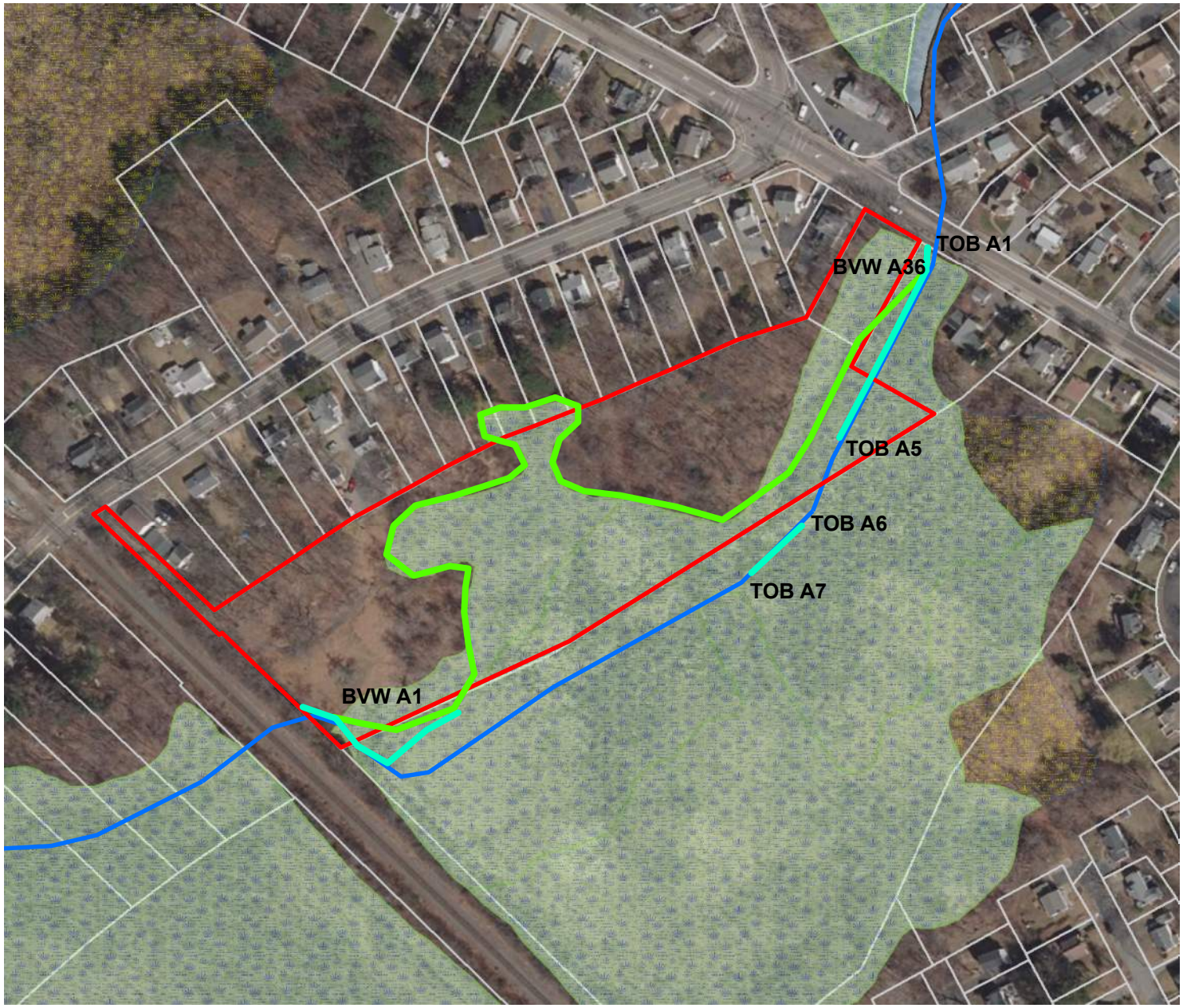

N
W E
S

200 100 0 200
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

- Perennial Stream Bank
- Bordering Vegetated Wetland
- Investigation Area
- Perennial Stream
- Intermittent Stream
- Marsh/Bog
- Wooded marsh
- Cranberry Bog
- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune
- Parcel
- Parcel

ACECs

- ACECs

NHESP Habitats

- NHESP Estimated Habitats of Rare Wildlife
- NHESP Priority Habitats of Rare Species
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools

Outstanding Resource Waters

- Public Water Supply Contributor
- ORW for ACEC
- ORW for both Water Supply and Other

FIGURE 4

Maillet, Sommes and Morgan Land
Reading MA

Environmental Resources Map

Weston & Sampson

APPENDIX A

ACOE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Malliet, Sommes & Morgan City/County: Reading Sampling Date: 11/18/2020

Applicant/Owner: State: MA Sampling Point: BVW-A7 WET

Investigator(s): Devin Batchelder Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none):

Slope (%): 0-1% Lat: 42°31'46.7"N Long: 72° 07'11.8"W Datum:

Soil Map Unit Name: Freetown Muck NWI classification: PSS1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 0"
Water Table Present?	Yes X	No _____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0"

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: BVW-A7 WET

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. red maple (Acer rubrum)	5	Yes	FAC
2. grey birch (Betula populifolia)	2	No	FAC
3. white oak (Quercus alba)	1	No	FACU
4.			
5.			
6.			
7.			
	8	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. redosier dogwood (Cornus sericea)	15	Yes	FACW
2. speckled alder (Alnus uncana)	10	No	FACW
3. winterberry (Ilex verticillata)	5	No	FACW
4.			
5.			
6.			
7.			
	30	= Total Cover	

Herb Stratum (Plot size: 5')			
1. tussock sedge (Carex stricta)	25	Yes	OBL
2. purple loosestrife (Lythrum salicaria)	25	Yes	OBL
3. sensitive fern (Onoclea sensibilis)	25	Yes	FACW
4. meadowsweet (Spiraea alba latifolia)	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: BVW-A7 WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10Y2/1	100					Organic	
12-18	10Y2/1	95	10YR4/3	10	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Malliet, Sommes & Morgan City/County: Reading Sampling Date: 11/18/2020

Applicant/Owner: _____ State: MA Sampling Point: BVW-A7 UP

Investigator(s): Devin Batchelder Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): 0-1% Lat: 42°31'46.7"N Long: 72° 07'11.8"W Datum: _____

Soil Map Unit Name: Freetown Muck NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: BVW-A7 UP

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. northern red oak (Quercus rubra)	25	Yes	FACU
2. red maple (Acer rubrum)	10	No	FAC
3.			
4.			
5.			
6.			
7.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. glossy buckthorn (Frangula alnus)	10	Yes	FAC
2. northern red oak (Quercus rubra)	5	No	FACU
3. red maple (Acer rubrum)	5	No	FAC
4. multiflora rose (Rosa multiflora)	1	No	FACU
5. morrow's honeysuckle (Lonicera morrowii)	1	No	FACU
6.			
7.			
	22	= Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. grape vine (Vitis Spp.)	1	Yes	FAC
2.			
3.			
4.			
	1	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	21	x 3 =	63
FACU species	32	x 4 =	128
UPL species	0	x 5 =	0
Column Totals:	53 (A)		191 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

__ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: BVW-A7 UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR2/2	100					FSL	
12-18	10YR4/3	100					FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Soils are extremely stony.

APPENDIX B

Site Photographs

Photo 1: Bordering Vegetated Wetland Located Onsite

Photo 2: Perennial Stream (Aberjona River)

Photo 3: Wetland Soils Located Onsite

Attachment C – Wetland Mitigation Plan

ATTACHMENT C
Wetland Replacement and Restoration Plan

Mystic River Watershed Maillet Conservation Area

May 2021

1.0 INTRODUCTION

The Applicant, the Town of Reading, proposes to install a stormwater constructed wetland system and provide open space improvements and site amenities at the Maillet, Sommes and Morgan (Maillet) Conservation Land, at 0 Lowell Street and 0 Willow Street in Reading, Massachusetts. The proposed project is part of a larger, grant-funded effort designed to address current and future flooding within the Mystic River Watershed and improve climate change resiliency and water quality while advancing environmental justice and open space connectivity.

The proposed project will result in a small amount of impact to Bordering Vegetated Wetland (BVW) to allow the proposed constructed stormwater wetland system to be constructed. Given the configuration of the wetland area, which occupies the central portion of the site, impacts to the BVW are unavoidable. The project design and configuration avoid and minimize BVW impacts to the extent practicable but are necessary to maintain a continuous flow between constructed stormwater wetland cells, which will require the installation of a 24-inch pipe between constructed wetland Cells 1 and 2.

The proposed pipe crosses the wetland between flagging stations A21 and A11, just north of the existing boardwalk crossing, resulting in a net disturbance of 711 SF of BVW. Installation of the pipe will result in temporary alterations within the BVW; the proposed new boardwalk path will be elevated above the BVW above the pipe with direct impacts associated with sleeper footings.

Alterations to BVW have been avoided and minimized to the extent practicable given the site constraints; however, some BVW alteration is necessary to meet the project goals. Temporary and permanent impacts to BVW will be mitigated through a 1,000 SF wetland replacement area adjacent to flagging stations A22 and A23, as well as restoration and revegetation of the existing boardwalk crossing (approximately 500 SF) to provide a greater than 2:1 mitigation ratio for impacts to BVW.

Alternative configurations for the project design were considered, but the proposed design, coupled with wetland mitigation in the form of wetland replacement and wetland restoration will result in a project that will meet the performance standards for work within the BVW in accordance with the Massachusetts Wetlands Protection Act regulations at 310 CMR 10.55(4)(d) (1 through 7) and the local requirements under Section 3.C.3 (a-g) under the Town of Reading General Bylaw (Section 7.1) and associated Wetlands Protection Regulations.

Details of the proposed project and mitigation plan are provided on the attached project plans, entitled “Mystic River Watershed, Maillet Conservation Area, Reading, Massachusetts,” prepared by Horsley Witten Group, Inc., and dated May 2021 (**Attachment D**). A discussion of the proposed mitigation measures is provided below.

2.0 WETLAND REPLACEMENT AND RESTORATION DETAILS

Wetland replacement activities will generally include the removal of fill material and debris as well as existing vegetation within the footprint of the two wetland replacement areas, regrading and establishment of a connection to the existing wetland area, introduction of high-organic content soils, introduction of coarse woody debris or boulders to improve habitat diversity, stabilization of disturbed soils with native seed mixes, and revegetation of wetland areas with native plants to provide for a 75% native plant community within all impacted areas after two growing seasons (as required under 310 CMR 10.55(4)(b)(6)). A qualified professional (Wetlands Specialist) will oversee all phases of the wetland restoration efforts to ensure that requirements set forth in the proposed plan are met.

This wetland replacement plan was developed based upon observations made by HW of existing conditions and is modeled after the Massachusetts Inland Wetland Replacement Guidelines (March 2002) prepared by MassDEP). The replacement plan is also designed to meet the regulatory criteria for wetland replacement set forth in 310 CMR 10.55(4)(b)(1) through (7) as well as the provisions within the local regulations .

2.1 Wetland Specialist

A Wetland Specialist or equivalent profession will oversee all aspects of the wetland replacement and restoration activities. This individual must have a minimum of 3-5 years of experience in wetland replacement or restoration and will be responsible for the following, including, but not limited to, finalizing the location of the replacement areas, overseeing siltation controls, final grading, overseeing plantings, long-term monitoring of plant growth and any invasives, and preparing and submitting monitoring reports. This individual will also be granted the discretion to make slight field adjustments to ensure wetland replacement and restoration success.

2.2 Erosion and Sedimentation Control

Prior to the commencement of any wetland replacement activities, a sedimentation and erosion control barrier consisting of staked siltation fencing or staked silt socks will be installed along the existing wetland boundary to protect the adjacent areas during earth-moving activities.

Erosion control barriers will be regularly inspected and properly maintained during and after construction, including after every storm event, pursuant to specifications. Devices will be removed at the end of the two-year monitoring period if vegetation has been successfully established and sediments are stabilized.

2.3 Site Preparation and Excavation

Following installation of the sedimentation barrier, vegetation and soils within the proposed replacement area will be removed using mechanized equipment, creating an area totaling approximately 1,000 SF of wetland area. Sediments and vegetation removed from this area will be transported off-site to a suitable disposal facility; soils may be re-used on-site as fill material if appropriate. Miscellaneous debris observed within the replacement areas will be removed and disposed of off-site at a suitable facility. At the discretion of the Wetland Specialist, suitable debris may be retained and stockpiled nearby for re-introduction in the replacement areas following final grading and introduction of wetland soils to enhance wildlife habitat. The replacement area will be designed to mimic the microtopography of the adjacent BVW; the elevations specified on the replacement BVW as shown on the attached plans are based on observations of the adjacent natural wetlands.

Wetland restoration will occur within the footprint of the existing crossing, and will require minimal effort to restore the footprint, including removal of the existing footbridge, slight regrading to establish pit and mound microtopography, incorporation of wildlife habitat enhancements, replanting with native woody vegetation, and stabilization with a native seed mix. In Addition, the trails that connect to the boardwalk will be re-routed and existing trails will be blocked with vegetation to discourage their use and allow for restoration success.

2.4 Soils

Depending upon the condition of the underlying soils within the replacement area, the area will either be lightly re-graded and/or supplemented as necessary. Soils within the impacted BVW will be reused as feasible and will not be compacted or grubbed in order to retain soil structure and the existing seedbank/rootstock. It is anticipated that these would need to be supplemented to accommodate for the larger replacement area.

If it is determined that soils need to be supplemented, the replacement areas would be over-excavated by approximately 6-12 inches to allow for introduction of a layer of low permeability soils and organic-rich sediments to support the proposed wetland plant community.

It will be ensured that the completed wetland replacement area will tie into the adjacent wetland grades to allow for an unrestricted hydrologic connection between the existing wetland area and the replacement areas. Variable microtopography within the replacement area will be created to enhance habitat diversity and improve the hydrologic connection with groundwater.

The organic-rich soils will be obtained from a commercial source, will be certified as weed-free, and will be allowed to settle for a minimum of 48 hours prior to introducing plants.

2.5 Wetland Replacement Area Plantings

Following placement of wetland soils and re-grading, native saplings, shrubs, and herbaceous materials obtained from local nursery stock will be introduced within the replacement areas. Proposed species were selected to be compatible with the natural wetland and designed to enhance the existing vegetation community.

Proposed species for the wetland replacement and restoration areas and adjacent buffer include, but are not limited to, red maple (*Acer rubrum*), river birch (*Betula nigra*), tupelo (*Nyssa sylvatica*), with sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), spicebush (*Lindera benzoin*), and arrowwood (*Viburnum dentatum*), stabilized with a native wetland seed mix in accordance with the specifications provided on the plans (Sheets L-8 and L-9).

Tree species will be planted singly, while shrubs and container-grown herbaceous plants will be planted in clusters to provide a mosaic of wetland plantings. Plantings will be installed near the beginning or the end of the growing season for Middlesex County, MA (April 16 – October 18; USDA, 2002), to ensure greater plant survival. Proposed plantings are designed to provide a densely vegetated forested swamp community upon full grow-out.

2.6 Stabilization with Wetland Seed Mix

A wetland seed mix will be introduced to stabilize disturbed soils within the wetland replacement areas. Appropriate seed mixes that contain native seeds suitable for most wetland mitigation sites are commercially available. A native seed mix, such as the "New England Wetmix," supplied by New England Wetland Plants, Inc. (www.newp.com) or acceptable equivalent, will be introduced to stabilize the soil surface and enhance the wetland plant community to ensure a 75% native wetland plant cover after two growing seasons.

According to the NEWP website, the New England Wetmix "contains a wide variety of native seeds that are suitable for most wetland restoration sites that are not permanently flooded. All species are best suited to moist ground as found in most wet meadows, scrub shrub, or forested wetland restoration areas." Following the planting of woody vegetation and fern species, the seed mix will be introduced at the recommended application rate of 1 LB/2500 SF (or 18 lbs./acre) and lightly raked in as recommended. All plantings will be watered during the two to three week grow-in period as necessary.

Species included within this wetland seed mix include: fox sedge (*Carex vulpinoidea*), lurid sedge (*Carex lurida*), blunt broom sedge (*Carex scoparia*), sensitive fern (*Onoclea sensibilis*), blue vervain (*Verbena hastata*), hop sedge (*Carex lupulina*), green bulrush (*Scirpus atrovirens*), nodding bur marigold (*Bidens cernua*), bristly sedge (*Carex comosa*), fringed sedge (*Carex crinita*), American mannagrass (*Glyceria grandis*), wool grass (*Scirpus cyperinus*), soft rush (*Juncus effusus*), spotted Joe Pye weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), mud plantain (*Alisma subcordatum*), New England aster (*Aster novae-angliae*), rattlesnake grass (*Glyceria canadensis*), purplestem aster (*Aster puniceus*), soft stem bulrush (*Scirpus validus*), blueflag (*Iris versicolor*), swamp milkweed (*Asclepias incarnata*), and monkey flower (*Mimulus ringens*).

Upper reaches and side slopes along the constructed stormwater wetland side slopes are described on Sheet L-8.

2.7 Invasive Species Management

HW observed the presence of numerous non-native invasive species within the resource areas and adjacent buffer zone during various the site surveys, the most prevalent of which is Japanese knotweed (*Fallopia japonica*), found most predominantly in the western part of the site and in areas along the Aberjona River. Other invasive species identified include Black locust (*Robinia pseudoacacia*), Norway maple (*Acer platanoides*), common buckthorn (*Rhamnus cathartica*), grey willow (*Salix cinerea*), and a single Amur cork tree (*Phellodendron amurense*). Other non-native species observed at the project site include clumps and individuals of multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), winged euonymus (*Euonymus alatus*), honeysuckle (*Lonicera* sp.), entanglements of Oriental bittersweet (*Celastrus orbiculatus*), and carpets of garlic mustard (*Alliaria petiolata*).

These species are capable of spreading rapidly through and extensive seedbank, and/or rhizomes and can leave a long-lived seed bank in the soil. As these species are considered either invasive, likely invasive, or potentially invasive in Massachusetts, precautions will be taken to minimize the re-introduction or spread of this species within the newly created wetland replacement areas. Any observed seedlings found within the replacement areas during the grow-in and monitoring periods will be pulled by hand, bagged, and disposed of properly.

2.8 Monitoring

The wetland replacement areas will be monitored twice annually (approximately early to mid-June and early to mid-September) for a minimum of two growing seasons to assess the relative success of the replacement wetlands. Semi-annual site inspections conducted during late spring and late summer will include an assessment of the relative health and vigor of the planted vegetation, percent vegetative cover, percent cover of wetland species, and general compliance with the performance standards.

Written reports detailing the findings of each monitoring event will be submitted on an annual basis for two years, to the Reading Conservation Commission and MassDEP. Photographic documentation will be incorporated within the monitoring reports and photographs will be taken from pre-established vantage points for consistency between monitoring events. Recommendations will be made for the replacement of dead or dying plants, and any additional remediation, as necessary.

3.0 WETLAND REPLACEMENT GENERAL SEQUENCE OF CONSTRUCTION

1). A qualified wetland professional, Wetland Specialist (WS), will be identified to monitor all phases of construction of the replacement areas including, but not limited to, installation of sedimentation control barriers, removal of fill materials and debris, excavation of sub-base materials, soil augmentation, revegetation, reseeding, and implementation of the monitoring plan. The WS will photo-document all phases of the restoration process and provide reports to the Reading Conservation Commission.

2). The WS will meet on-site with the Conservation Commission or its designated Agent to review all components of the replacement areas prior to the start of wetland replacement

activities, to discuss any slight deviations that may need to be considered, and to establish the reporting protocol and schedule.

3). Prior to construction of wetland replacement areas, wetland flags will be refreshed as needed to define the boundary of the proposed wetland replacement areas as shown on the site plans.

4). A sedimentation and erosion control barrier will be installed along the wetland boundary in accordance with the manufacturer's specifications, by a qualified contractor who is experienced with installation of such sedimentation and erosion control barriers and who is also generally experienced in wetland replacement practices.

5). Debris within the restoration area will be removed using mechanized equipment such as a bobcat. All debris will be disposed of at a proper facility in accordance with all state and local laws, unless determined by the WS to be suitable for reuse in the mitigation areas.

6). Existing vegetation within the replacement areas will be cut, removed (or stockpiled for reuse if suitable), and the root systems grubbed and removed.

7). The wetland replacement areas will be roughly excavated to a depth of six to 12 inches below grade to ensure proper hydrological connection to groundwater within the final grade of the replacement areas.

8). Clean, weed-free high-organic soils will be introduced within the replacement areas and regraded, incorporating slight undulating pit-and-mound microtopography throughout to mimic conditions within the undisturbed wetland. The exact configuration of the replacement areas will be determined in the field by the WS in coordination with the contractor. Sediments will be allowed to settle for a minimum of 48 hours prior to planting.

9). A sedimentation and erosion control barrier will be installed along the upland areas and the newly created wetland boundaries to protect the replacement areas during grow-in period.

10). Following settling of introduced sediments, small rocks and/or fallen woody debris will be placed within the replacement areas to provide added wildlife habitat. Additional habitat features may be incorporated (e.g., turtle nesting habitat)

11). Nursery grown native vegetation will be planted in accordance with the planting specifications, working from far interior portions of the restoration area outward. Seeding with appropriate seed mix will occur in a similar manner, such that newly planted vegetation and seed mix are not continually trampled once planted. All plantings will be conducted by a qualified landscaper or other qualified professional who has experience with wetland replacement areas. Any deviations from the specified planting list must be approved by the WS.

12). Note: All plantings should occur during the growing season for Middlesex County, Massachusetts, which occurs from April 16 through October 18. Should the replacement activities commence outside of that timeframe, excavation and soil augmentation activities

may occur at the discretion of the WS, however, plantings should not occur. Instead, the area may be temporarily stabilized with a non-persistent annual rye or weed-free straw.

13). All vegetation will be irrigated, particularly during dry periods, at the direction of the WS overseeing the wetland replacement efforts.

14). The downgradient erosion control barrier will be removed from existing wetland boundary once all soils are stabilized with vegetation.

15). The Contractor will inspect erosion and sediment control systems immediately after each significant rainfall and daily during prolonged rainfall events and will make repairs immediately including the removal and disposal of accumulated sediments when they reach approximately one-half the height of the control system, and when directed by the WS. Control systems will be promptly replaced if fabric decomposes or system becomes ineffective prior to the expected usable life.

16). The WS will monitor the wetland replacement areas twice annually during the growing season for two growing seasons as required. Bi-annual site inspections will include an assessment of the relative health and vigor of the introduced plants, percent cover of vegetation, percent cover of wetland species, and general compliance with the performance standards under 310 CMR 10.55(4)(b)(1 through 7). Randomly distributed vegetation monitoring quadrats will be established within the wetland restoration areas to provide consistent data regarding the relative success of the wetland plant community and to confirm that they are meeting the 75 percent reestablishment standard. The WS will establish photographic stations in strategic locations throughout the replacement areas to ensure consistency among photo-documentation during the monitoring period. Monitoring forms such as the sample provided in DEP handbook will be used. Annual reports will be submitted to the Reading Conservation Commission and to MassDEP.

4.0 COMPLIANCE WITH WETLANDS REGULATIONS

The proposed wetland replacement areas are designed to comply with the regulations at 310 CMR 10.55(4)(b) (1 through 7) and the local requirements. The regulations state,

> *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:*
>
> 1. *the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");*

Combined, the proposed wetland replacement and restoration areas are 1,500 SF, providing an approximately 2:1 mitigation ratio to impacted BVW. This is designed in an area near the impact area and was determined to be the most appropriate location for the proposed mitigation area.

Additional mitigation would result in the removal of undisturbed forested buffer zone, areas that are also important for the protection of wetland resources.

2. *the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;*
3. *the overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;*
4. *the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;*

The proposed replacement areas are located directly adjacent to two wetland segments and at the same or similar elevations. They are designed to mimic the adjacent hill-side seep wetlands.

5. *the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;*

The proposed wetland replacement areas are sited in an area directly adjacent to and north of the proposed wetland crossing and within the same approximate distance to the nearby unnamed perennial stream.

6. *at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and*

The wetland replacement areas are designed to achieve a 75 percent or greater native wetland plant community after two growing seasons. Native plantings obtained from nursery stock are the same or similar in composition to species observed within the undisturbed wetland. Native seed mixes will ensure cover of native species as well as provide erosion control during the grow-in period.

7. *the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.*

In the exercise of this discretion, the issuing authority shall consider the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the extent to which adverse impacts can be avoided, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replacement or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

The proposed wetland replacement area is designed to be consistent with all other performance standards for freshwater wetlands and will provide greater than 2:1 mitigation for lost wetlands associated with the proposed project. Provisions have been incorporated to provide additional wildlife habitat features, and a monitoring plan has been established to control the spread of invasive species that have been observed in the vicinity.

An alternatives analysis of the project has been performed as presented in the project narrative (Section 3.2) and it has been determined that the proposed project and preferred alternative is the only feasible alternative that will meet the project purpose and achieve the project goals. Stormwater will be managed in accordance with the Massachusetts Stormwater Management Standards, incorporating a vegetated swale to manage runoff of new impervious surfaces.

5.0 REFERENCES

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Attachment D – Project Plans

see attached

Attachment E – Stormwater Management Report

(under separate cover)