



**Notice of Intent
Leicester Conservation
Commission**

February 2022

**A127/B128 Transmission Line
Bypass Project**

Prepared For:

New England Power Company
40 Sylvan Road
Waltham, MA 02451

Prepared By:

TRC
6 Ashley Drive
Scarborough, ME 04074



February 18, 2022

Stephen Parretti, Chair
Town of Leicester Conservation Commission
3 Washburn Square
Leicester, MA 01524

**RE: A127/B128 Transmission Line Bypass Project
New England Power Company
Notice of Intent (NOI)**

Dear Mr. Parretti and Commissioners:

On behalf of New England Power Company (NEP), TRC Companies (TRC) is pleased to submit the enclosed Notice of Intent (NOI) for the A127/B128 Transmission Line Bypass Project (Project) located at 408 Stafford Street Leicester, Massachusetts.

This NOI is being filed with the Leicester Conservation Commission (LCC) pursuant to the Massachusetts Wetland Protection Act (WPA; M.G.L.c. 131, § 40) and its Regulations (310 CMR 10.00) as well as the Leicester Wetlands Protection Bylaw. While the Project has been designed to limit impacts to wetland resource areas, some activities associated with the Project will require work within Bordering Vegetated Wetlands (BVW).

The Project qualifies as a Limited Project under 310 CMR 10.53(3)(d) which allows for the "*The construction, reconstruction, operation and maintenance of underground and overhead public utilities, such as electrical distribution or transmission lines.*" Due to the layout of the resource areas at the site, it is necessary for a portion of the proposed work to take place in buffer zone and BVW.

We trust that the enclosed information meets the requirements of the LCC to issue an Order of Conditions for the proposed Project and very much appreciate your review of this information. If you should have any questions about this NOI, please do not hesitate to contact me at (207) 274-2655 or via email at dherzlinger@trccompanies.com.

Sincerely,

TRC Environmental Corporation

A handwritten signature in blue ink that reads "Daniel J. Herzlinger".

Daniel J. Herzlinger, PWS
Senior Project Manager

C: MassDEP Central Regional Office

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WPA FORM 3 – NOTICE OF INTENT



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

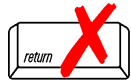
Document Transaction Number

Leicester

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):

408 Stafford Street

a. Street Address

Leicester

b. City/Town

01524

c. Zip Code

Latitude and Longitude:

42.228

d. Latitude

-71.868

e. Longitude

Map 34

f. Assessors Map/Plat Number

A3-0 & A1.11-0

g. Parcel /Lot Number

2. Applicant:

Michael

a. First Name

Tyrrell

b. Last Name

New England Power Company

c. Organization

40 Sylvan Road

d. Street Address

Waltham

e. City/Town

MA

f. State

02451

g. Zip Code

603-316-4469

h. Phone Number

i. Fax Number

michael.tyrrell@nationalgrid.com

j. Email Address

3. Property owner (required if different from applicant):

☒ Check if more than one owner

New England Power Co. fee-owned & easement
(see attached)

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):

Dan

a. First Name

Herzlinger

b. Last Name

TRC Companies

c. Company

6 Ashley Drive

d. Street Address

Scarborough

e. City/Town

ME

f. State

04074

g. Zip Code

207-274-2655

h. Phone Number

i. Fax Number

dherzlinger@trccompanies.com

j. Email address

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

\$500.00

a. Total Fee Paid

\$237.50

b. State Fee Paid

\$262.50

c. City/Town Fee Paid

WPA Form 3 - Supplemental Page 1A

Parcel ID	Property Owner (WPA Form 3, Section A.3.)					Registry of Deeds (WPA Form 3, Section A.8.)		
	Owner Name	Mailing Address	City	State	Zip Code	County	Book*	Page*
Map 34, Lot A3-0	New England Power Company	40 Sylvan Road	Waltham	MA	02451	Worcester	2328	512&51
Map 34, Lot A1. 11-0	Martiros, Michael J	12 Shelter Ridge Road	Leicester	MA	01524	Worcester	53176	95

Deed references listed here are for the underlying parcel. Book/Page provided on WPA Form 3, Section A.8. is for the New England Power Company easement across both of these properties.



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A. General Information (continued)

6. General Project Description:

NEP plans to construct a new 115kV substation off of Stafford Street, within the existing A127/B128 transmission line right-of-way (ROW). The proposed substation is currently being designed and will be the subject of a future NOI filing. Before the substation can be constructed, the existing A127/B128 circuits will need to be temporarily relocated to the south of the proposed substation.

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

- | | |
|---|---|
| 1. <input type="checkbox"/> Single Family Home | 2. <input type="checkbox"/> Residential Subdivision |
| 3. <input type="checkbox"/> Commercial/Industrial | 4. <input type="checkbox"/> Dock/Pier |
| 5. <input checked="" type="checkbox"/> Utilities | 6. <input type="checkbox"/> Coastal engineering Structure |
| 7. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) | 8. <input type="checkbox"/> Transportation |
| 9. <input type="checkbox"/> 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)(d) - "The construction, reconstruction, operation and maintenance of underground and overhead public utilities, such as electrical distribution or transmission lines, or communication...."

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(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:

Worcester - deed reference below for NEP
easement

2320

c. Book

b. Certificate # (if registered land)

4

d. Page Number

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

- ☐ 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.
- ☒ 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.



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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. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	2,324 1. square feet	2,324 (in-situ) 2. square feet
c. <input type="checkbox"/> 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. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="checkbox"/> 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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	1. square feet _____ 2. cubic yards dredged _____	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	1. square feet _____	2. cubic yards beach nourishment _____
e. <input type="checkbox"/> Coastal Dunes	1. square feet _____	2. cubic yards dune nourishment _____
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	1. linear feet _____	
g. <input type="checkbox"/> Rocky Intertidal Shores	1. square feet _____	
h. <input type="checkbox"/> Salt Marshes	1. square feet _____	2. sq ft restoration, rehab., creation _____
i. <input type="checkbox"/> Land Under Salt Ponds	1. square feet _____	
	2. cubic yards dredged _____	
j. <input type="checkbox"/> Land Containing Shellfish	1. square feet _____	
k. <input type="checkbox"/> 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. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	1. square feet _____	
4. <input type="checkbox"/> 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. <input type="checkbox"/> 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 2021

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/mas-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:

North Shore - Hull to New Hampshire border:

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

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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City/Town

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.



Massachusetts Department of Environmental Protection
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WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

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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.

Transmission Line Bypass Plan

a. Plan Title

TRC

N/A

b. Prepared By

c. Signed and Stamped by

2/10/2022

1"=100'

d. Final Revision Date

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:

1232306

2/17/2022

2. Municipal Check Number
e-file

3. Check date

4. State Check Number

5. Check date

TRC

6. Payor name on check: First Name

7. Payor name on check: Last Name



Massachusetts Department of Environmental Protection
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Provided by MassDEP:

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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.

Michael Tyrrell

1. Signature of Applicant

February 18, 2022

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date

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.

FILING FEE DOCUMENTATION



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:

408 Stafford Street

a. Street Address

e-file

c. Check number

Leicester

b. City/Town

\$237.50

d. Fee amount

2. Applicant Mailing Address:

Michael

a. First Name

Tyrrell

b. Last Name

New England Power Company

c. Organization

40 Sylvan Road

d. Mailing Address

Waltham

e. City/Town

MA

f. State

02451

g. Zip Code

603.316.4469

h. Phone Number

i. Fax Number

Michael.Tyrrell@nationalgrid.com

j. Email Address

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

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.

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

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
2.e. Inland Limited Project	1	\$500.00	\$500.00

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	\$500.00
	a. Total Fee from Step 5
State share of filing Fee:	\$237.50
	b. 1/2 Total Fee less \$12.50
City/Town share of filing Fee:	\$262.50
	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.)



21 Griffin Road North
Windsor, CT 06095
860.298.9692

Citizens Bank
CONNECTICUT
51-7011/2111

CHECK DATE

February 17, 2022



AMOUNT

\$ 262.50

PAY Two Hundred Sixty Two and 50/100 Dollars

PAY TO THE ORDER OF
Town of Leicester
Conservation Commission
3 Washburn Square
Leicester, MA 01524

BY *Michelle Rubino*

VOID AFTER 90 DAYS

AUTHORIZED SIGNATURE



21 Griffin Road North
Windsor, CT 06095
860.289.9692

EMILY BUSINESS FORMS 800.392.6018 DELTEK VISION

1232306

Check Date: 2/17/2022

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
WETLAND TRNSMTL FEE	2/17/2022	007757559941	262.50			262.50
Town of Leicester		TOTAL	262.50			262.50
Citizen Bank - Disbursement	16	123809				



21 Griffin Road North
Windsor, CT 06095
860.298.9692

Citizens Bank
CONNECTICUT
51-7011/2111

CHECK DATE

February 17, 2022



Security Check Features
includes
Details on Back

PAY One Hundred Twenty Five and 00/100 Dollars

AMOUNT

PAY TO THE ORDER OF

\$ 125.00

Town of Leicester

Conservation Commission

3 Washburn Square

Leicester, MA 01524

BY *Michelle Rubino*

VOID AFTER 90 DAYS

AUTHORIZED SIGNATURE *MP*



21 Griffin Road North
Windsor, CT 06095
860.289.9692

EMILY BUSINESS FORMS 800.392.6018 DELTEX VISION

1232305

Check Date: 2/17/2022

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
WETLAND BYLAW-FEE	2/17/2022	007757559940	125.00			125.00
Town of Leicester		TOTAL	125.00			125.00
Citizen Bank - Disbursement	15	123809				

ATTACHMENT A – Project Narrative

1.0 INTRODUCTION

1.1.1 Background

The New England Power Company (“NEP”) is required to complete certain transmission system upgrades to be undertaken in the Towns of Leicester and Auburn, Massachusetts to comply with Northeast Power Coordination Council (“NPCC”) Directory #1 Design and Operation of the Bulk Power System¹ (“BPS”) requirements for dual pilot scheme protection systems (“Directory #1 Upgrades”).

The NPCC is one of six regional electric reliability councils² that, in concert with the North American Electric Reliability Corporation (“NERC”), seek to assure a reliable, resilient, and secure North American bulk power system through the effective and efficient identification, reduction, and mitigation of reliability risks. The NPCC carries out its mission, in part, through the development and enforcement of regional reliability standards and criteria. As a transmission provider, NEP must maintain its transmission system in compliance with these standards and criteria.

While still in the design stage, the planned work involves the construction of a new BPS-compliant substation (“Stafford Street Substation”) on NEP-owned property in the Town of Leicester, and a package of upgrades to the protection schemes on its A-127, B-128 and Z-126 115 kV circuits to bring these circuits into compliance with NPCC Directory #1 requirements. The upgrades require the installation of dual high-speed protection systems on all BPS circuits in New England by September 2025 (Attachment B – Figure 1).

NEP will file a comprehensive Notice of Intent (“NOI”) for the construction of the Stafford Street Substation and transmission line system upgrades once the design is complete. That filing can be expected later this summer.

1.1.2 Focus of this Notice of Intent

TRC Companies (“TRC”) has prepared this NOI on behalf of the NEP for compliance with the Massachusetts Wetlands Protection Act (“WPA”) (M.G.L. Chapter 131, Section 40) and its associated regulations (310 CMR 10.00) as well as the Leicester Wetlands Protection Bylaw (“Leicester Bylaw”).

The existing A127/B128 circuits need to be temporarily reconfigured well in advance of the future NPCC Directory 1 requirements discussed above. The temporary reconfiguration will require the installation of two temporary transmission line structures and two permanent transmission line structures. Some of the proposed temporary reconfiguration and structure installation work will take place within areas regulated under the WPA and the Leicester Bylaw as shown on the Transmission Line Bypass Plan (Attachment B – Figure 2) and Table 1 below. In

¹ The NPCC defines Bulk Power System Elements as “The interconnected electrical systems within northeastern North America comprised of system elements on which faults or disturbances can have a significant adverse impact outside of the local area.”

² NPCC’s geographic area includes the state of New York, the six New England states, Ontario, Québec, and the Canadian Maritime Provinces of New Brunswick and Nova Scotia.

addition, the work will require temporary construction access across Bordering Vegetated Wetlands (“BVW”) within NEP’s existing maintained easement.

Table 1. Work Proposed in Jurisdictional Resource Areas.

NEW STRUCTURE NUMBER	FUTURE STRUCTURE LOCATION	JURISDICTIONAL RESOURCES
506 A	A127 line west of proposed substation	• 100-ft buffer zone
506 C	B128 line west of proposed substation	• 100-ft buffer zone
T-1	Temporary structure for A127/B128, west of proposed substation	• 100-ft buffer zone

2.0 SITE DESCRIPTION AND EXISTING CONDITIONS

The Project site is a 45-acre parcel, which is a primarily forested area surrounded by residential areas traversed by the NEP ROW. The NEP ROW is vegetated with typical upland herbaceous and shrub species. All work is limited to the existing transmission line ROW. See Attachment B – Figure 1.

2.1 Jurisdictional Resource Areas

Multiple resource areas, as defined in the WPA and described in the following sections, exist at the site. TRC conducted a wetland and waterbody delineation survey on October 15, 16, and 18, and November 13, 2019. This survey resulted in a delineation of five wetlands and four intermittent streams, as well as two additional drainage features (Attachment C – Wetland Delineation Report). For further information, refer to the approved Order of Resource Area Delineation (MassDEP File #197-0658) that was issued by the Leicester Conservation Commission (“LCC”) on May 27, 2020³ and the Wetland Delineation Report (Attachment C).

2.1.1 Bordering Vegetated Wetland

Per 310 CMR 10.55(2), BVW are “*freshwater wetlands which border on creeks, rivers, streams, ponds and lakes*” and “*are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants.*”

The Project will require temporary access through the following BVWs: W-GR-3 and W-GR-4 (Attachment B – Figure 2). For more information on these BVWs, please see the attached Wetland Delineation Report (Attachment C).

³ After receiving the ORAD, an additional small parcel owned by NEP and a small area west of the existing solar farm was delineated. These minor updates are reflected on the plans submitted with this NOI.

2.1.2 Buffer Zones

Per 310 CMR 10.02, a buffer zone extends 100 feet outward from Bank and BVW, whichever abuts the upland portion of the site.

Buffer zone exists along BVW throughout the Project site as shown on the Transmission Line Bypass Plan (Attachment B – Figure 2). Two permanent structures and one temporary structure will be installed in buffer zone.

2.1.3 Leicester Bylaw 25-Foot ‘No-Disturb’ Zone

As stated within the Leicester Bylaw, the LCC regulates a 25-Foot ‘No-Disturb’ Zone. This area is protected for possible adverse effects from construction and acts as a buffer zone for adjacent resource areas. The Leicester Bylaw also states that structures which already exist within this 25-foot zone must be located as far from the resource area as practically possible if the footprint of the existing structure is changing.

The LCC can waive this 25-foot zone restriction. Waivers may be granted if a project is within a highly developed/disturbed area or if there has been previous development. The proposed Project is eligible for a waiver since all work will be taking place in a previously cleared and maintained utility line ROW. None of the new structures will be located within the 25-Foot ‘No-Disturb’ Zone.

3.0 PROPOSED CONSTRUCTION SEQUENCE & WORK DESCRIPTION

The Project involves three (3) primary components: initial, limited brush clearing (as necessary), equipment mobilization to the site and transmission line structure installation. These components are described in more detail below.

3.1 Work Descriptions

3.1.1 Brush Clearing

Maintenance brush cutting along the ROW in the vicinity of the structure installations will be performed as necessary to facilitate access to the work locations and provide a safe work area for project personnel.

3.1.2 Equipment Access and Work Envelopes

NEP will avoid and minimize wetland resource area impacts to the extent practical by using existing upland areas on the ROW for initial staging of equipment and using construction mats to cross wetlands. The work envelopes depicted on the Transmission Line Bypass Plan (Attachment B – Figure 2) represent the maximum extent where equipment will set up and operate during construction. These areas will be subject to limited disturbance through vegetation clearing, construction matting and/or placement of gravel to create a stable work area. Best Management Practices (“BMPs”) will be implemented to minimize any potential impacts to regulated resources at the site and are discussed in Section 4.2

3.1.3 Temporary Transmission Line Configuration Work

The A127 and B128 will be supported on temporary single pole, double-circuit davit arm, guyed structures, labeled T-1 and T-2 on the Transmission Line Bypass Plan (Attachment B – Figure 2). The temporary direct-embed structures are typically installed using a truck-mounted, auger style drill to bore each hole. A vertical culvert is installed, the structure is placed inside the culvert and then backfilled and compacted with soil material displaced from the boring of each hole. The temporary structure diameter is 30-inches for a total impact area of 5 square-feet per structure.

The temporary configuration also requires removal and installation of permanent structures. Existing Structures 506 and 507 on the A127/B128 will be removed from the ROW and new permanent Structures 506A and 506C will be installed to the west of BVW W-GR-3 (Attachment B – Figure 2). The permanent structures will be steel H-frame, dead-end structures. These new structures will be installed on seven-foot wide, concrete foundations. The total footprint for each structure is approximately 38 square-feet.

The permanent structures are typically installed by first excavating the area for the structure foundation, installing a rebar cage and then pouring the concrete foundation. Once the concrete foundation is cured, the steel structure is bolted onto the foundation.

Once the temporary structures and two new permanent structures are in place, the conductors and shieldwire for the A127/B128 will be installed to complete the temporary relocation work. Temporary Structures T-1 and T-2 will be removed once the temporary bypass is no longer needed.

4.0 IMPACTS, BMPS & PERFORMANCE STANDARDS

The proposed Project will result in temporary impacts to jurisdictional resource areas as described in the following table:

RESOURCE/BUFFER AREA	IMPACT	IMPACT DESCRIPTION
BVW	2,324 SF (Temporary)	<ul style="list-style-type: none">• Construction mat access route.
Buffer Zone (100-ft of BVW)	81 SF 17,255 SF (Temporary)	<ul style="list-style-type: none">• Installation of two permanent transmission line structures and one temporary structure.• Temporary disturbance for work envelope.
25-ft No-Disturb Zone	1,148 SF (Temporary)	<ul style="list-style-type: none">• No permanent impact, some equipment may be staged in portions of 25-ft 'No-Disturb' Zone during construction.

4.1 Best Management Practices

While work will occur in regulated areas, BMPs will be utilized and temporarily disturbed areas will be restored after the structure installations are complete. Proposed BMPs and mitigation measures are discussed below and shown in the applicable pages of National Grid's

Environmental Guidance Document – *Access, Maintenance and Construction Best Management Practices* (EG-303NE) (Attachment D).

BMPs that will be implemented at the site include:

- having an Environmental Inspector/Monitor on-site during construction;
- avoiding significant disturbance to regulated wetlands;
- using construction mats for equipment access to the wetland, which avoids rutting and direct soil disturbance;
- using erosion controls where an erosion hazard exists;
- restoring altered areas to pre-construction conditions by applying a wetland seed mix and or mulching with straw, if necessary;
- keeping spill response equipment on-hand and ready for deployment in the event of a spill; and
- refueling any equipment outside the BVW and buffer zone.

4.2 Bordering Vegetated Wetland Performance Standards

Proposed temporary impacts to BVW are limited to the placement of timber matting. NEP will meet the performance standards associated with BVW as shown below.

PERFORMANCE STANDARDS 310 CMR 10.55(4)	PROJECT'S COMPLIANCE WITH PERFORMANCE STANDARD
(a) Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.	As described in Section 4.1, BMPs are being utilized to minimize the proposed temporary impacts to BVW. These temporary impacts are unavoidable due to the location of the existing structures.
(d) Notwithstanding the provisions of 310 CMR 10.55(4)(a), (b) and (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.	No NHESP Estimated or Priority Habitats or Potential or Certified Vernal Pools are mapped within the proposed Project. Therefore, the proposed Project will have no adverse effects on rare species.
<i>Performance Standards b, c, and e are not applicable since the proposed impacts are temporary in nature and will not lead to the loss or significant alteration of BVW and are, therefore, omitted here.</i>	

4.3 Stormwater Management

Since no grade changes or new impervious surfaces are proposed and the proposed impacts are temporary, a Stormwater Management Report and Checklist is not required and has not been included.

BMPs will be used, as described earlier in Section 4.1, to control erosion and sedimentation during the proposed work.

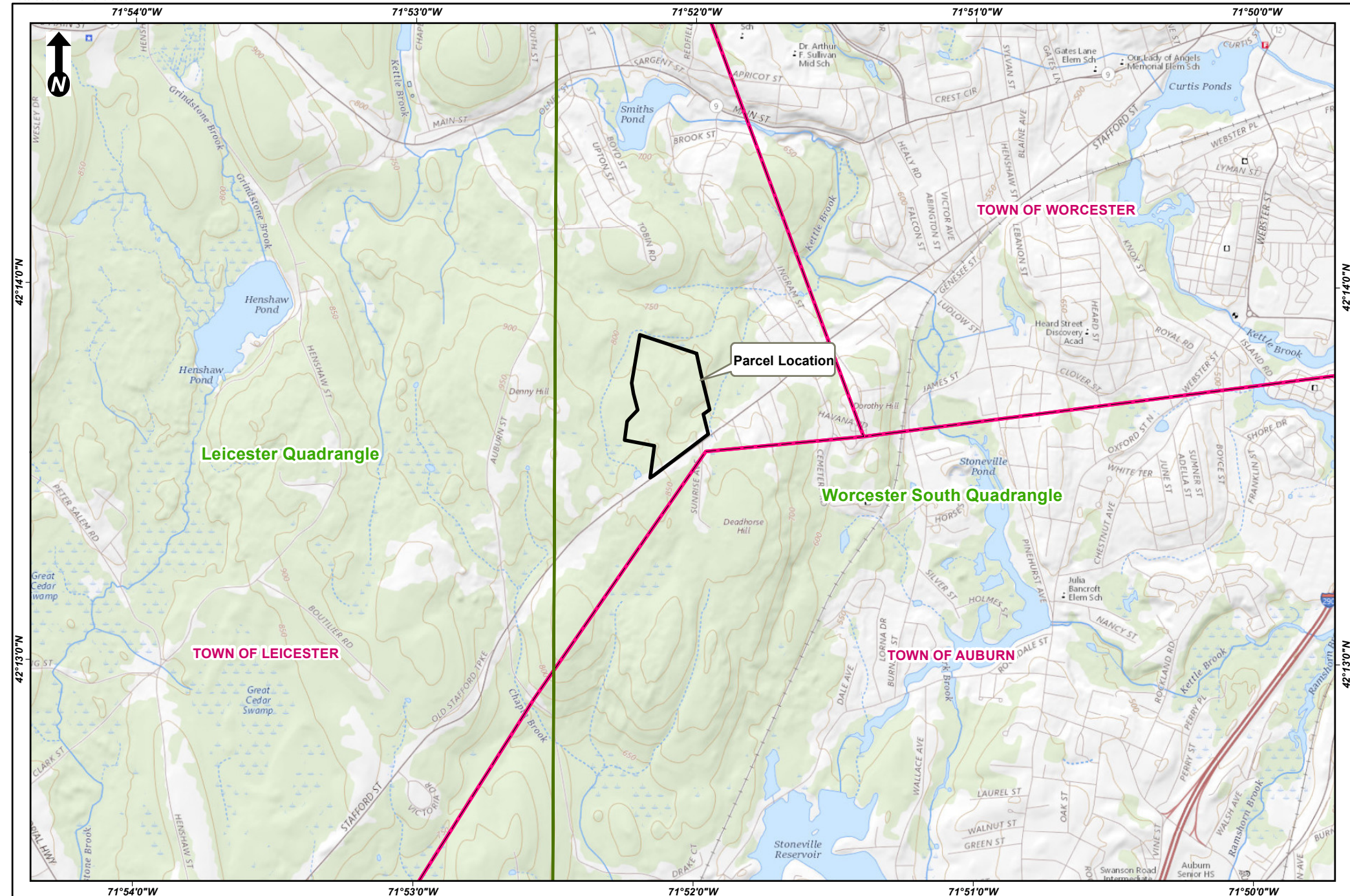
4.4 25-Foot 'No Disturb' Zone

As stated in the Leicester Bylaw, "The Commission shall have the power to issue a waiver to an applicant requesting to perform specific activities within the 25-foot "No Disturb Zone". A waiver may be granted to applicants whose projects occur within previously developed or highly disturbed areas and/or for projects and activities that will improve the protection to the resource area."

Since the electrical transmission line infrastructure previously existed within the 25-foot 'No Disturb' Zone, a waiver is being requested to allow limited temporary disturbance within areas of the work envelopes that overlap with the 25-foot 'No Disturb' Zone. No permanent alteration is taking place within the 25-foot 'No Disturb' Zone as part of the Project.

5.0 ADDITIONAL REGULATORY INFORMATIONY INFORMATION

There are no Outstanding Resource Waters, Areas of Critical Environmental Concern, NHESP Estimated or Priority Habitats, or NHESP Potential or Certified Vernal Pools within the site.



Scale:
1 inch = 2,000 feet
0 1,000 2,000
Feet
(Page Size 8.5 x 11)

STAFFORD STREET SUBSTATION

Figure 1
USGS Parcel Location Map
Town of Leicester, MA

Source: TRC, 2013
National Geographic
Society, i-cubed,
"USGSTopo" Base Map
nationalgrid
TRC



ATTACHMENT C – Wetland Delineation Report



Wetland and Waterbody Delineation Report

March 2020

Stafford Street Substation Project

**Stafford Street
Leicester, Massachusetts**

Prepared By:

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, Massachusetts 01854

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Appendix A Figures

Figure 1. Project Location

Figure 2. Wetland Delineation

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Appendix D NRCS Soil Report

Appendix E USGS StreamStats Report

1.0 Introduction

This report presents the results of a wetland and waterbody delineation conducted on October 15, 16, 18, and November 13, 2019 by TRC Companies, Inc. (TRC) off Stafford Street in the Town of Leicester, Worcester County, Massachusetts (Parcel). The survey included approximately 45 acres of the 45-acre parcel listed by the Leicester Tax Assessor as Map 34, Parcel 3. New England Power Company d/b/a National Grid is proposing to construct a new electrical substation at the Site. The wetland and waterbody delineation was completed to support the design of the new substation so resource areas can be avoided to the maximum extent possible.

The survey for wetlands and streams focused on the entire Parcel as well as adjacent parcels, when accessible, within 200 feet.

This report documents wetlands, streams, and other aquatic resources (ponds, lakes, impoundments, etc.) in the Parcel, regardless of assumed jurisdictional status and addresses the implementation of local and state regulated buffer areas. To the extent practicable, the delineated resources were investigated to determine drainage patterns and a physical nexus to Waters of the United States (WOUS).

Appendix A provides a Parcel location map (Figure 1) and a map of the resources delineated by TRC (Figure 2). Appendix B includes representative photographs of the Parcel, Appendix C includes wetland determination data forms, and Appendix D contains the Natural Resources Conservation Service (NRCS) Soil Report. Appendix E contains the U.S. Geological Survey (USGS) StreamStats Report.

2.0 Regulatory Authority

2.1 United States Army Corps of Engineers

In accordance with Section 404 of the Clean Water Act (CWA), the United States Army Corps of Engineers (USACE) asserts jurisdiction over WOUS, defined as wetlands, streams, and other aquatic resources under the regulatory authority per Title 33 Code of Federal Regulations (CFR) Part 328, and the United States Environmental Protection Agency (EPA) per Title 40 CFR Part 230.3(s). Wetlands are defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (EPA, 2019).

The USACE will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

The USACE will decide jurisdiction over the following waters based on analysis to determine whether they have significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent;
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and

- Wetlands adjacent to, but that do not directly abut, a relatively permanent non-navigable tributary.

The USACE generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands, and that do not carry a relatively permanent flow of water.

The USACE will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters; and
- Significant nexus includes consideration of hydrologic and ecologic factors.

The USACE also regulates navigable waters under Section 10 of the Rivers and Harbor Act (33 U.S.C. 401 et seq.), which requires that a permit must be issued by the USACE to construct any structure in or over any navigable WOUS, as well as any proposed action (such as excavation/dredging or deposition of materials) that would alter or disturb these waters. If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the proposed activity is outside the boundaries of the stream in associated wetlands, a Section 10 permit from the USACE is required.

2.2 Massachusetts Department of Environmental Protection

The Massachusetts Wetlands Protection Act (WPA) (Section 40 of Chapter 131 of the General Laws of Massachusetts and regulated under 310 Code of Massachusetts Regulations [CMR] section 10.00) defines multiple coastal (310 CMR 10.25-10.37) and inland resource areas (310 CMR 10.54-10.59) and gives the Massachusetts Department of Environmental Protection (MassDEP) jurisdiction over these resource areas. In most cases, the WPA also gives MassDEP jurisdiction over buffer zone extending 100 feet from the edge of the resource area. In addition to MassDEP, local municipalities' Conservation Commissions are responsible for administering the WPA and any local wetlands ordinance or bylaw.

The WPA defines two types of Land Subject to Flooding (310 CMR 10.57): isolated and bordering. Isolated Land Subject to Flooding (ILSF) is defined as "an isolated depression or a closed basin which serves as a ponding area for run-off or high ground water which has risen above the ground surface." Bordering Land Subject to Flooding (BLSF) is defined as "an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland." The boundary of BLSF is further defined as "the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm" as shown on the most recently available flood profile data prepared for the community by the National Flood Insurance Program (NFIP), currently administered by the Federal Emergency Management Agency (FEMA), successor to the U.S. Department of Housing and Urban Development). Under the WPA, ILSF and BLSF do not have associated buffer zones.

The WPA defines Bordering Vegetated Wetland (BVW) under 310 CMR 10.55 as any freshwater wetland which borders on creeks, rivers, stream ponds or lakes. Under the WPA, a 100-foot buffer zone is associated with BVWs. Isolated wetlands (IWs) are not connected to a waterway or waterbody and, therefore, are not regulated under the WPA and do not have an associated buffer zone under the WPA.

IWs may have an associated buffer zone or similar zone associated with them under the local ordinance or bylaw. In some cases, IWs may qualify as ILSF and, in those instances, are regulated under the WPA.

The WPA defines Bank (310 CMR 10.54) as the portion of the land surface which normally abuts and confines a waterbody, occurring between a waterbody and a BVW and adjacent floodplain, or between a waterbody and an upland. Under the WPA, a 100-foot buffer zone is associated with Banks.

The WPA defines Riverfront Area (310 CMR 10.58) as the 200-foot area of land measured horizontally from a river's Mean Annual High Water (MAHW) line. The section defines a river as any stream that is perennial and includes, but is not limited to, streams shown as perennial on current USGS maps or that have a watershed size greater than or equal to one square mile. Riverfront Area is not associated with intermittent streams as they do not flow throughout the year. Under the WPA, Riverfront Area does not have an associated buffer zone.

A Notice of Intent filing is required from the MassDEP for any disturbance, including the removal of vegetation or alteration to a Banks, BVW, ILSF, BLSF, Riverfront Area, or buffer zone.

2.3 Town of Leicester Conservation Commission

The Leicester Conservation Commission (LCC) administers a local wetlands bylaw and regulations in addition to the WPA. The LCC has jurisdiction over any freshwater wetland, marsh, wet meadow, bog, swamp, vernal pool, spring, bank, reservoir, lake, pond of any size, beaches, dunes, estuaries, lands under water bodies, intermittent streams, brooks, creeks, and land within 100 feet of any of these areas. The LCC also has jurisdiction over perennial rivers, streams, brooks, creeks, and land within 200 feet of these areas known as riverfront area. The LCC also has jurisdiction over land subject to flooding or inundation by groundwater or surface water, and lands subject to flooding. These resource areas are all protected whether or not they border surface waters.

The LCC also implements a 25 foot "No Disturb Zone" (also considered a "No Build Zone") around all protected resource areas.

3.0 Project Site Characteristics

TRC reviewed publicly available literature and materials used for the investigation, survey, and report preparation, including:

- MassGIS OLIVER¹, the National Hydrography Dataset;
- The Worcester South and Leicester 7.5 Minute Quadrangles (USGS 2018);
- The FEMA Flood Insurance Rate Map (FIRM) Panel 2501280010A (effective date June 18, 1980);
- The U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI);
- The U.S. Department of Agriculture (USDA), NRCS Web Soil Survey;
- Recent aerial orthoimagery.

¹ The MassDEP Wetlands Conservancy Program uses aerial photography and photo interpretation to delineate and map wetland boundaries. These boundaries are available via the Massachusetts Office of Geographic Information (MassGIS) online mapping tool, OLIVER. Desktop review consisted of utilizing MassGIS OLIVER to gather a general understanding of existing conditions and potential regulated resource areas.

- Massachusetts Natural Heritage and Endangered Species Program (NHESP) Certified and Potential Vernal Pools.

The following sections summarize TRC's review of each of these resources.

3.1 Hydrology

The Parcel is undulating with many hills and valleys throughout. The Parcel generally drains northward and eastward via three valleys to off-site wetlands and tributaries.

3.1.1 Floodplains

Flood hazard areas identified on the FEMA's FIRMs are identified as Special Flood Hazard Areas (SFHAs). SFHAs are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. FEMA uses a variety of labels for SFHAs:

Zone A	Zone A99	Zone AR/A
Zone AO	Zone AR	Zone V
Zone AH	Zone AR/AE	Zone VE, and
Zones A1-A30	Zone AR/AO	Zones V1-V30
Zone AE	Zone AR/A1-A30	

Moderate flood hazard areas, labeled Zone B or Zone X (shaded on FEMA mapping) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded on FEMA mapping).

According to the FEMA FIRM 25027C0801E (effective date July 4, 2011) the Parcel is located within a Zone X area of minimal flood disturbance zone.

3.2 Federal and State Mapped Wetlands and Streams

The USFWS is the principal federal agency tasked with providing information to the public on the status and trends of wetlands on a national scale. The USFWS NWI is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of nationwide wetlands (where mapped). NWI mapping data is offered to promote the understanding, conservation, and restoration of wetlands. The online MassGIS OLIVER mapping tool was accessed to determine the extent of state-mapped aquatic resources.

According to TRC's review of NWI and MassGIS OLIVER mapping, there are three wetlands on site: one isolated in the central section, and two along the northern border of the site, each extending off site to the north.

3.3 Mapped Soils

The NRCS's Web Soil Survey identifies four soil map units within the Parcel. Map units can represent a type of soil, a combination of soils, or miscellaneous land cover types (e.g., water, rock outcrop, developed impervious surface). Map units are usually named for the predominant soil series or land types within the map unit. A summary of soil characteristics for soils mapped at the Site are included in Table 1, below. The

following sections provide details about hydric ratings, drainage class, prime farmland, and hydrologic soil groups (HSGs). Details about soil map unit descriptions are provided in the NRCS Soil Report included as Appendix D.

Table 1: Mapped Soils

Symbol	Soil Name	Hydric Rating (%)	Drainage Class	Hydrologic Soil Group	Farmland Classification
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	99	Very poorly drained	D	Not prime farmland
420B	Canton fine sandy loam, 3 to 8 percent slopes	1	Well drained	B	All areas are prime farmland
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	4	Well drained	B	Not prime farmland
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	0	Well drained	B	Not prime farmland

3.3.1 Hydric Rating

The *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) (1987 Manual) defines a hydric soil as "...a soil that in its undrained condition, is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation."

Due to limitations imposed by the small scale of the soil survey mapping, it is not uncommon to identify wetlands within areas not mapped as hydric soil while areas mapped as hydric often do not support wetlands. This concept is emphasized by the NRCS:

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

Hydric Soil Rating (HSR) indicates the percentage of a map unit that meets the criteria for hydric soils.

Map unit 73A has an HSR of 99 percent, map unit 422B has an HSR of 4 percent, map unit 420B has an HSR of 1 percent, and map unit 422C has an HSR of 0 percent. For map unit 73A, the hydric components within the map unit are Whitman, extremely stony; Ridgebury, extremely stony; Scarboro; and Swansea. For map units 420B and 422B, the hydric component within the map units are Swansea.

3.3.2 Natural Drainage Class

Natural drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil developed. Anthropogenic alteration of the water regime, either through drainage or irrigation, is not a consideration unless the alterations have significantly changed the morphology of the soil.

Map unit 73A is rated as very poorly drained. Map units 420B, 422B, and 422C are rated as well drained.

3.3.3 Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses (the land could be cropland, pastureland, rangeland, forestland, or other land, but not urban built-up land or water). Land used for a specific high-value food or fiber crop is classified as “unique farmland.” Generally, additional “farmlands of statewide importance” include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. In some local areas, there is concern for certain additional farmlands, even though these lands are not identified as having national or statewide importance. These farmlands are identified as being of “local importance” through ordinances adopted by local government. The NRCS State Conservationist reviews and certifies lists of farmland of state and local importance. These lists, along with state and locally established Land Evaluation and Site Assessment (LESA) systems where applicable, are used by federal agencies to review and evaluate activities that may impact farmland. As defined in 7 CFR Part 657, important farmland encompasses prime and unique farmland, as well as farmland of statewide and local importance.

According to the NRCS, three map units (73A, 422B and 422C) are classified as “not prime farmland”, and one map unit (420B) is classified as “all areas are prime farmland.”

3.3.4 Hydrologic Soil Groups

Soils are assigned to a HSG based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A: Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B: Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C: Soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D: Soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. Soils consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition in Group D are assigned to dual classes.

Map unit 73A, is in HSG D. Map units 420B, 422B, and 422D are in HSG B.

4.0 Wetland and Stream Delineation Methodology

In addition to the desktop review described in Section 3.0, TRC biologists performed field investigations within the Parcel to identify wetlands, waterbodies, and other surface waters on October 15, 16, 18 and November 13, 2019.

4.1 Non-wetland Aquatic Resource Methodology

Streams and other non-wetland aquatic features within the Parcel were identified by the presence of an OHWM, which is the line established by the fluctuations of water (33 CFR 328.3). The OHWM line is indicated by physical characteristics, which can include: a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other characteristics of the surrounding areas. For streams five feet or more in width, each stream bank was delineated with blue flagging. For smaller streams, the stream centerline is delineated with notes for the width. Flags were located with a handheld global positioning system (GPS) unit with sub-meter accuracy.

4.2 Wetland Delineation Methodologies

The delineation of wetlands was conducted in accordance with criteria set forth in the 1987 Manual, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012) (Supplement), and the *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act- A Handbook* (MassDEP, 1995) (the MassDEP Handbook).

The three-parameter approach to identify and delineate wetlands presented in the 1987 Manual and the Supplement requires that, except for atypical and disturbed situations, wetlands possess hydrophytic vegetation, hydric soils, and wetland hydrology. A two-parameter approach that considers only vegetation and hydrology indicators is presented in the MassDEP Handbook. Per the MassDEP Handbook, hydric soil is included as evidence of wetland hydrology.

Wetland boundary flags were located with a handheld GPS unit with sub-meter accuracy. Delineated resources were classified in accordance with the system presented in *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013).

No formal vernal pool surveys were conducted. Areas that appeared to show potential for meeting vernal pool classification were noted, photographed, and mapped as potential vernal pools.

4.2.1 Hydrophytic Vegetation Methodologies

Hydrophytic vegetation is defined in the 1987 Manual as:

...the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Plants are categorized according to their occurrence in wetlands. Scientific names and wetland indicator statuses for vegetation are those listed in *The National Wetland Plant List: 2016 Wetland Ratings* (NWPL) (Lichvar et al., 2016). The indicator statuses specific to the "Northcentral and Northeast Region" as defined by the USACE apply to the Parcel. For upland species that are not listed on the NWPL, the Integrated

Taxonomic Information System was referenced for currently accepted scientific names. The official short definitions for wetland indicator statuses are as follows:

- Obligate Wetland (OBL): Almost always occur in wetlands;
- Facultative Wetland (FACW): Usually occur in wetlands, but may occur in non-wetlands;
- Facultative (FAC): Occur in wetlands and non-wetlands (50/50 mix);
- Facultative Upland (FACU): Usually occur in non-wetlands, but may occur in wetlands; and
- Upland (UPL): Almost never occur in wetlands.

Plants that are not found in a region, but are found in an adjacent region, take on the indicator status of that adjacent region for dominance calculations. Plants that are included on the NWPL, but not within the Site region or an adjacent region, are not included in dominance calculations. Plants that are not found in wetlands in any region are considered “UPL” for dominance calculations.

Vegetation community sampling was accomplished using the methodologies outlined in the 2012 Supplement. The “50/20 rule” was applied to determine whether a species was dominant in its stratum. In using the 50/20 rule, the plants that comprise each stratum are ranked from highest to lowest in percent cover. The species that cumulatively equal or exceed 50 percent of the total percent cover for each stratum are dominant species, and any additional species that individually provides 20 percent or more percent cover is also considered dominant species of its respective strata.

A hydrophytic vegetation community is present when: 1) all of the dominant species are FACW and/or OBL (Rapid Test for Hydrophytic Vegetation); 2) greater than 50 percent of the dominant species’ (as determined by the 50/20 rule) indicator statuses are FAC, FACW, or OBL (Dominance Test); and/or 3) when the calculated Prevalence Index is equal to or less than 3.0. When applying the Prevalence Index, all plants are assigned a numeric value based on indicator status (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and their abundance (absolute percent cover) is used to calculate the prevalence index.

Cover types are also assigned to each wetland and waterbody in accordance with the system presented in *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013).

4.2.2 Hydric Soil Methodologies

Hydric soil indicators described in *Field Indicators for Identifying Hydric Soils in New England, Version 4* (New England Hydric Soils Technical Committee, 2017) and in *Field Indicators of Hydric Soils in the United States, Version 8.2* (NRCS, 2018) were used to determine the presence of characteristic soil morphologies resulting from prolonged saturation and/or inundation. Soil color was described using standard color notations provided on Munsell® soil color charts (X-Rite, Inc., 2015). Soil texture was determined using the methods described by Thien (1979). Soil test pits were dug using a spade shovel to a depth of approximately 20 inches or more (if needed).

Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (MLRA Handbook) (USDA NRCS, 2006) was referenced to determine the hydric soil indicators that apply to the Site. Per the MLRA Handbook, the Parcel is within Major Land Resource Area (MLRA) 144A (New England and Eastern New York Upland, Southern Part) of Land Resource Region (LRR) R (Northeastern Forage and Forest Region). Hydric soil indicators that do not apply to this MLRA were not considered on the wetland determination data forms.

The presence or absence of hydric soils was determined through examination of samples extracted with a hand shovel or hand auger from the upper horizons of the soil profile. Soils were examined to depths of approximately 18 to 20 inches, unless restrictive layers such as hard pan, rock, densely packed fill materials, etc. were encountered at shallower depths.

4.2.3 Wetland Hydrology Methodologies

Per the 1987 Manual:

The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions. Hydrology is often the least exact of the parameters, and indicators of wetland hydrology are sometimes difficult to find in the field. However, it is essential to establish that a wetland area is periodically inundated or has saturated soils during the growing season. (Environmental Laboratory, 1987)

Wetland hydrology indicators are grouped into 18 primary and 11 secondary indicators presented in the Supplement. The USACE considers wetland hydrology to be present when at least one primary indicator or two secondary indicators are identified.

5.0 Results

5.1 Upland Areas

The upland areas consist of successional forests throughout most the Parcel. The dominant vegetation in the uplands consists of red maple (*Acer rubrum*), northern red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), shag-bark hickory (*Carya ovata*), pignut hickory (*Carya glabra*), striped maple (*Acer pensylvanicum*), winged sumac (*Rhus copallinum*), mountain-laurel (*Kalmia latifolia*), American witch-hazel (*Hamamelis virginiana*), glossy false buckthorn (*Frangula alnus*), Allegheny blackberry (*Rubus allegheniensis*), common red raspberry (*Rubus idaeus*), northern spicebush (*Lindera benzoin*), marginal wood fern (*Dryopteris marginalis*), American hog-peanut (*Amphicarpaea bracteata*), wrinkle-leaf goldenrod (*Solidago rugosa*), evergreen woodfern (*Dryopteris intermedia*), northern bracken fern (*Pteridium aquilinum*), princess-pine (*Dendrolycopodium obscurum*), and annual ragweed (*Ambrosia artemisiifolia*). The terrain of the Parcel is undulating throughout generally sloping to the north or northeast. The soils observed throughout upland portions of the Parcel were generally classified as silt loam or sandy loam.

5.2 Delineated Wetlands and Waterbodies

TRC identified five wetlands and seven waterbodies within the Parcel during the October and November 2019 resource delineation efforts (Figure 2 in Appendix A). One offsite wetland (W-GR-5) appears on Figure 2 because the buffer zone associated with this resource area extends on to the Parcel. Delineated areas are described in the following sections and summarized at the end of this section in Table 2. Refer to the photographs in Appendix B and the wetland determination data forms in Appendix C for further details about each delineated area.

5.2.1 Delineated Wetlands

Wetland W-GR-1 is a palustrine forested (PFO) wetland draining into intermittent stream S-GR-1. This wetland is in the eastern portion of the Parcel and drains off site to the east via stream S-GR-1. The dominant vegetation included yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), northern spicebush (*Lindera benzoin*), poison ivy (*Toxicodendron radicans*), and cinnamon fern (*Osmundastrum cinnamomeum*). Indicators of wetland hydrology included saturation, sparsely vegetated concave surface, moss trim lines, geomorphic position, shallow aquitard, microtopographic relief, and the FAC-neutral test. Soils were composed of a thick layer of dark silt loam with a restrictive layer of rock eight inches below the surface. This soil meets Hydric Soil Indicator A1 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). **This wetland is MassDEP/LCC jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.**

Wetland W-GR-2 is a palustrine forested (PFO) wetland associated with intermittent stream S-GR-4. The wetland is in the central portion of the Parcel and extends off site to the East. The dominant vegetation included red maple, highbush blueberry (*Vaccinium corymbosum*), northern spicebush, royal fern (*Osmunda spectabilis*), and shallow sedge (*Carex lurida*). Indicators of wetland hydrology included saturation, sparsely vegetated concave surface, water-stained leaves, moss trim lines, microtopographic relief, and the FAC-neutral test. Soils were composed of a thick layer of organic matter and dark silt. This soil meets Hydric Soil Indicator A1 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). A potential vernal pool was noted within this wetland. A follow up survey will need to be conducted in spring to determine whether it is an actual vernal pool or not. **This wetland is MassDEP/LCC jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.**

Wetland W-GR-3 is both a palustrine scrub-shrub (PSS) and palustrine forested (PFO) wetland associated with intermittent stream S-GR-2. The wetland is in the western portion of the Parcel and extends offsite to the West. The dominant vegetation included red maple, green ash (*Fraxinus pennsylvanica*), northern spicebush, purple meadow-rue (*Thalictrum dasycarpum*), evergreen woodfern (*Dryopteris intermedia*), maleberry (*Lyonia ligustrina*), and arrow-leaf tearthumb (*Persicaria sagittate*). Indicators of wetland hydrology included saturation, sparsely vegetated concave surface, drainage patterns, moss trim lines, microtopographic relief, and the FAC-neutral test. Soils were composed of a layer of organic matter and dark silty clay. This soil meets Hydric Soil Indicator A3 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). **This wetland is MassDEP/LCC jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.**

Wetland W-GR-4 is both an isolated palustrine scrub-shrub (PSS) wetland and palustrine forested (PFO) wetland associated with non-jurisdictional drainage D-GR-3. The wetland is in the southeastern portion of the Parcel and is completely contained on site. The dominant vegetation included (*Spiraea latifolia*), maleberry, poison ivy, and bristly dewberry (*Rubus hispidus*). Indicators of wetland hydrology included saturation, water-stained leaves, moss trim lines, microtopographic relief, and the FAC-neutral test. Soils were composed of a layer of dark mucky silt loam and a layer of gravelly clay loam, separated by a few inches of sand. This soil meets hydric soil indicator F3 as described in the Field Indicators (USDA NRCS, 2018). **This wetland is not MassDEP jurisdictional as it does not border a waterbody and it does not have a basin that is large enough or deep enough to meet the definition of Isolated Land Subject to Flooding based on field review. This wetland is unlikely to be USACE jurisdiction, as it does not have a clear connection to other WOUS. However, it is LCC jurisdictional since the LCC regulates both bordering and isolated wetlands under the Leicester Wetlands Protection Bylaw.**

Wetland W-DJH-1 a palustrine forested (PFO) wetland associated with non-jurisdictional drainage D-DJH-1 and intermittent stream S-DJH-2. The wetland is in the north-central portion of the Parcel and extends off site to the north. The dominant vegetation within this wetland included red maple, common winterberry (*Ilex verticillata*), northern spicebush, highbush blueberry, and sensitive fern (*Onoclea sensibilis*). Indicators of wetland hydrology included water-stained leaves, drainage patterns, geomorphic position, microtopographic relief, and the FAC-neutral test. Soils were composed of a layer of dark muck restricted at six inches by shallow rock. This soil meets Hydric Soil Indicators A1 as described in the Field Indicators (USDA NRCS, 2018). A potential vernal pool was noted within this wetland. A follow up survey will need to be conducted in spring to determine whether it is an actual vernal pool or not. ***This wetland is MassDEP/LCC jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

5.2.2 Delineated Waterbodies

Stream S-GR-1 is an intermittent stream (R4) that flows out of wetland W-GR-1 off site northeastward from the eastern side of the Parcel. The streambed was comprised of cobbles. TRC observed an average width of approximately 4 feet and no flow at the time of the survey. Stream S-GR-1 has defined banks such that the OHWM and the banks are coincident. The centerline of the stream was delineated.

The USGS does not map stream S-GR-1 nor is it digitized in the USGS StreamStats analysis ***This stream is MassDEP/LCC jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Stream S-GR-2 is an intermittent stream (R4) that flows out of wetland W-GR-3 to its terminus near the center of the Parcel. The streambed was comprised of cobbles. TRC observed an average width of approximately 3 feet and no flow at the time of the survey. Stream S-GR-2 has defined banks such that the OHWM and the banks are coincident. The centerline of the stream was delineated.

The USGS does not map stream S-GR-2 nor is it digitized in the USGS StreamStats analysis ***This stream is MassDEP/LCC jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Stream S-GR-4 is an intermittent stream (R4) that flows through narrow sections of wetland W-GR-2 ultimately dissipating within the wetland. The streambed was comprised of cobbles. TRC observed an average width of approximately 3 feet and a water depth of approximately 2 inches. Stream S-GR-4 has defined banks such that the OHWM and the banks are coincident. The centerline of the stream was delineated.

The USGS does not map stream S-GR-4 nor is it digitized in the USGS StreamStats analysis ***This stream is MassDEP/LCC jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Stream S-DJH-2 is an intermittent stream (R4) that flows out of wetland W-DJH-1 to the east. The streambed was comprised of cobbles. TRC observed an average width of approximately 4 feet and no flow at the time of the survey. Stream S-DJH-2 has defined banks such that the OHWM and the banks are coincident. The centerline of the stream was delineated. This stream is located just outside the limits of the Parcel but its buffer zone overlaps the Parcel.

The USGS does not map stream S-DJH-2 nor is it digitized in the USGS StreamStats analysis ***This stream is MassDEP/LCC jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Drainage D-DJH-1 is a non-jurisdictional drainage feature (NJD) that flows through into wetland W-DJH-1 from surrounding uplands. The streambed was comprised of cobbles and leaf litter. TRC observed an average width of approximately 4 feet and no flow at the time of the survey. NJD D-DJH-1 has defined banks such that the OHWM and the banks are coincident. The centerline was delineated.

The USGS does not map NJD D-DJH-1 nor is it digitized in the USGS StreamStats analysis. The definition of a stream in the WPA regulations at 310 CMR 10.04 states that “such a body of water which does not flow throughout the year (i.e. which is intermittent) is a stream except for that portion upgradient of all bogs, swamps, wet meadows and marshes. ***Since ephemeral drainage D-DJH-1 does not flow out of a wetland, this stream is not MassDEP jurisdictional. However, it may fall under USACE jurisdiction and TRC assumes it is jurisdictional under the Leicester Wetlands Protection Bylaw.***

Drainage D-GR-3 is a non-jurisdictional drainage feature (NJD) that flows out of uplands next to wetland W-GR-4 but does not connect to the wetland or any other waterbody. The streambed was comprised of cobbles and leaf litter. TRC observed an average width of approximately 5 feet and no flow at the time of the survey. NJD D-GR-3 has defined banks such that the OHWM and the banks are coincident. The centerline was delineated.

The USGS does not map NJD D-GR-3 nor is it digitized in the USGS StreamStats analysis. ***Since this drainage does not flow out of a wetland, it is not MassDEP jurisdictional and does not fall under USACE jurisdiction. We assume it is jurisdictional under the Leicester Wetlands Protection Bylaw.***

Table 2. Delineated Wetlands and Waterbodies

Wetland Field Designation	Field Designated NWI Classification ¹	Assumed Jurisdictional Status	Assumed Buffer/ Setback Requirements
W-GR-1	PFO	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
W-GR-2	PFO	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
W-GR-3	PFO/PSS	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
W-GR-4	PFO/PSS	Local	100-ft buffer zone 25-ft No Disturbance Zone
W-DJH-1	PFO	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
S-GR-1	R4	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
S-GR-2	R4	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
S-GR-3	R4	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
S-GR-4	R4	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone
S-DJH-2	R4	USACE/MassDEP/Local	100-ft buffer zone 25-ft No Disturbance Zone

Table 2. Delineated Wetlands and Waterbodies

Wetland Field Designation	Field Designated NWI Classification ¹	Assumed Jurisdictional Status	Assumed Buffer/ Setback Requirements
D-DJH-1	N/A	Local	100-ft buffer zone 25-ft No Disturbance Zone
D-GR-3	N/A	Local	100-ft buffer zone 25-ft No Disturbance Zone
¹ <i>The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition</i> (Federal Geographic Data Committee, 2013). Categories include: Palustrine Forested (PFO), Palustrine Shrub-Scrub (PSS), Riverine Intermittent (R4), and Ephemeral Stream (R6).			

6.0 Conclusions

It is TRC's opinion that delineated wetlands W-GR-1, W-GR-2, W-GR-3, and W-DJH-1 are BVWs regulated by MassDEP and are also likely regulated under USACE jurisdiction. Wetland W-GR-4, is regulated under the Leicester Wetlands Protection Bylaw only. There are no buffers or setbacks associated with USACE-regulated wetlands. However, there is a 100-foot buffer zone associated with MassDEP and LCC-regulated wetlands as well as a 25-foot "No Disturbance Zone" around all LCC-regulated wetlands.

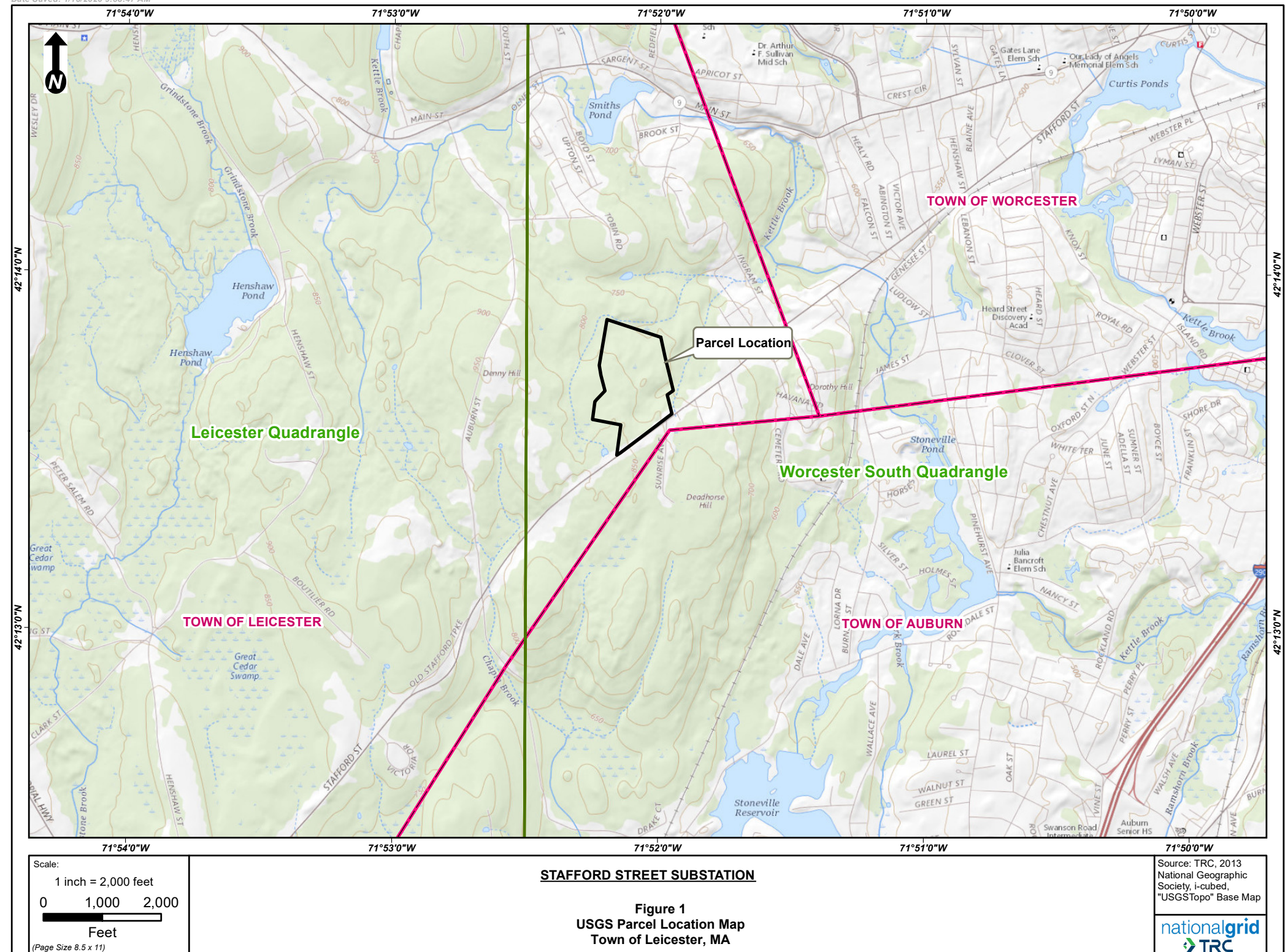
R4 streams S-GR-1, S-GR-2, S-GR-3, and S-DJH-1 are USACE jurisdictional, as they are hydrologically connected to WOUS. These streams are also regulated by the MassDEP/LCC, as they flow within, into, or out of a MassDEP-regulated wetland resource area. TRC assumes the two ephemeral drainages at the site (D-DJH-1 and D-GR-3) are only regulated by the LCC.

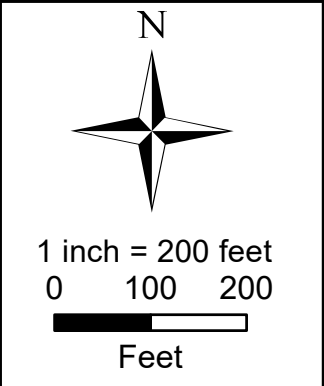
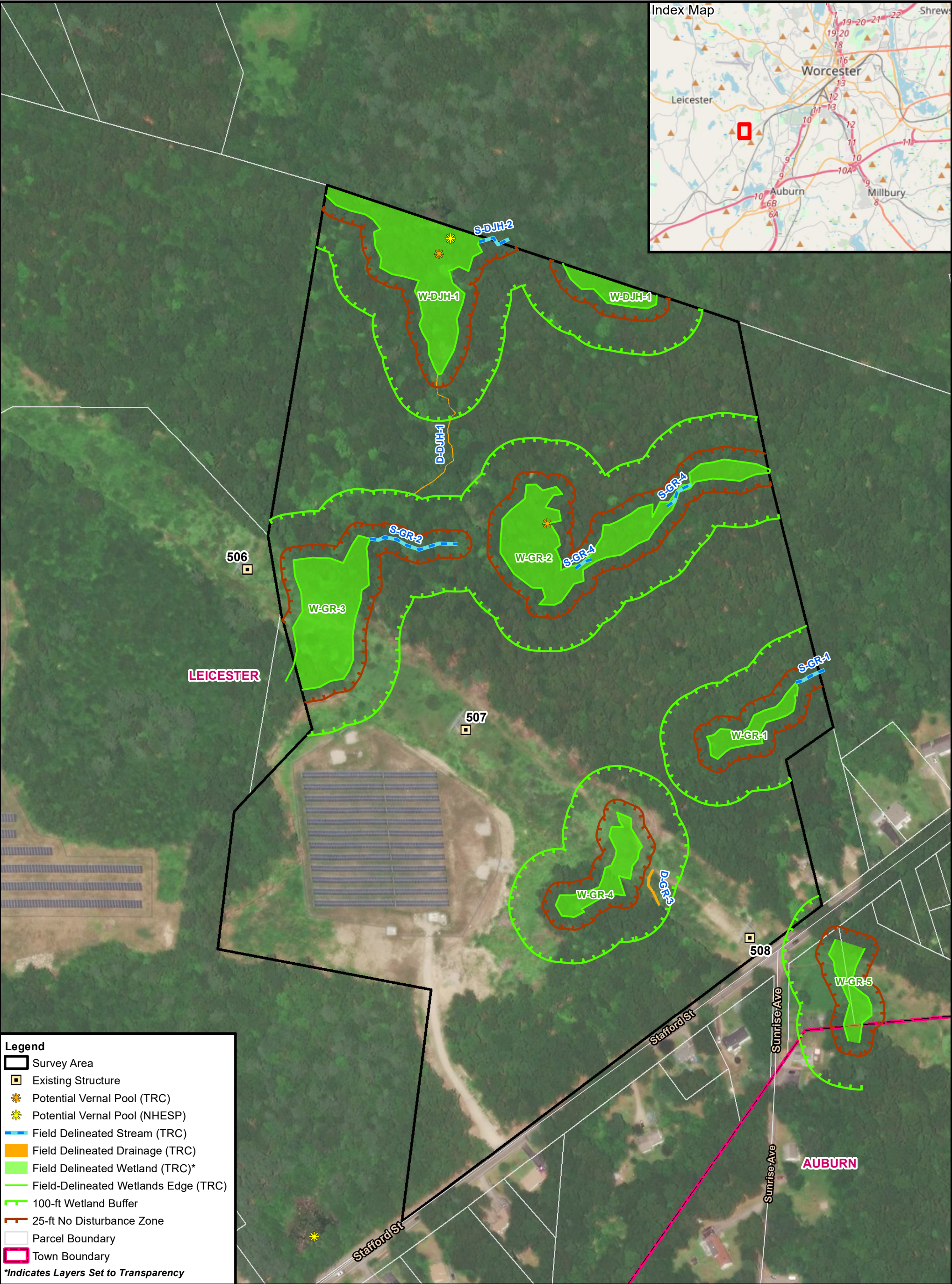
Final determination of jurisdictional status for on-site wetlands and waterbodies must be made by regulatory agencies.

7.0 References

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Appendix A: Figures





STAFFORD STREET SUBSTATION



**Figure 2
Wetland Delineation Results**



Town of Leicester, MA
January, 2020



TRC, MassGIS, NationalGrid, Esri & Contributors - "World Imagery"







Appendix B: Photographs



NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
Photograph: 1 Date: 10/15/2019 Direction: Unknown Description: Conditions observed at ephemeral drainage D- DJH-S1.	
Photograph: 2 Date: 10/15/2019 Direction: West Description: Conditions observed at intermittent stream S- DJH-S2 looking upstream.	



NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 3</p> <p>Date: 10/16/2019</p> <p>Direction: East</p> <p>Description:</p> <p>Conditions observed at ephemeral stream S-GR-S1 looking upstream.</p>	 A photograph of a forest stream. The water is shallow and flows over a bed of rocks and fallen leaves. The surrounding forest is dense with trees and undergrowth, including many ferns and fallen branches.
<p>Photograph: 4</p> <p>Date: 10/16/2019</p> <p>Direction: East</p> <p>Description:</p> <p>Conditions observed at ephemeral stream S-GR-S2 looking downstream.</p>	 A photograph of a forest stream. The water is shallow and flows over a bed of rocks and fallen leaves. The surrounding forest is dense with trees and undergrowth, including many ferns and fallen branches.



NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 5</p> <p>Date: 10/18/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Conditions observed at ephemeral drainage D-GR-S3 looking upstream.</p>	
<p>Photograph: 6</p> <p>Date: 11/13/2019</p> <p>Direction: Southwest</p> <p>Description:</p> <p>Conditions observed at intermittent stream S-GR-S4 looking upstream.</p>	



NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 7</p> <p>Date: 10/16/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Conditions observed at upland data point GR-W1-UPL.</p>	 A photograph showing a forest floor with a mix of green and yellow leaves, indicating early autumn. The ground is covered with fallen leaves and some green plants are still growing. The background shows several tree trunks.
<p>Photograph: 8</p> <p>Date: 10/22/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Typical conditions observed at wetland data point GR-W1-PFO .</p>	 A photograph showing a forest floor with a dense layer of fallen leaves and some green plants. There are several large, fallen logs on the ground. The background shows several tree trunks.

NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACUSETTS	
<p>Photograph: 9</p> <p>Date: 10/16/2019</p> <p>Direction: West</p> <p>Description:</p> <p>Typical conditions observed at upland data point GR-W2-UPL.</p>	
<p>Photograph: 10</p> <p>Date: 10/16/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Conditions observed at wetland W2 data point GR-W2-PFO.</p>	

NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 11</p> <p>Date: 10/16/2019</p> <p>Direction: North</p> <p>Description:</p> <p>Typical conditions observed at upland data point GR-W3-UPL1.</p>	
<p>Photograph: 12</p> <p>Date: 10/16/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Conditions observed at wetland W3 data point GR-W3-PSS.</p>	

NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 13</p> <p>Date: 10/16/2019</p> <p>Direction: South</p> <p>Description:</p> <p>Typical conditions observed at upland data point GR-W3-UPL2.</p>	
<p>Photograph: 14</p> <p>Date: 10/16/2019</p> <p>Direction: East</p> <p>Description:</p> <p>Conditions observed at wetland W3 data point GR-W3-PFO.</p>	

NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
Photograph: 15 Date: 10/16/2019 Direction: North Description: Typical conditions observed at upland data point GR-W4-UPL.	
Photograph: 16 Date: 10/16/2019 Direction: West Description: Conditions observed at wetland W4 data point GR-W4-PSS.	

NATIONAL GRID STAFFORD STREET SUBSTATION, LEICESTER, MASSACHUSETTS	
<p>Photograph: 17</p> <p>Date: 10/15/2019</p> <p>Direction: North</p> <p>Description:</p> <p>Typical conditions observed at upland data point DJH-W1-UPL.</p>	
<p>Photograph: 18</p> <p>Date: 10/15/2019</p> <p>Direction: West</p> <p>Description:</p> <p>Conditions observed at wetland W1 data point DJH-W1-PFO.</p>	

Appendix C: Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W1-PFO
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 2-5
 Subregion (LRR or MLRA): LRR R Lat: 42.2278173734 Long: -71.8669553754 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 8 to 15 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: GR-W1
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is PFO. Area is wetland, all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>			<u>Secondary Indicators (minimum of two required)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)			
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)			
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 					
Remarks: The criterion for wetland hydrology is met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W1-PFO

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1. <i>Acer rubrum</i>	40	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	5 (A)
2. <i>Betula alleghaniensis</i>	20	Yes	FAC	Total Number of Dominant Species Across All Strata:	5 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	100 (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:	
5. _____	_____	_____	_____	Total % Cover of:	Multiply By:
6. _____	_____	_____	_____	OBL species	0 x 1 = 0
7. _____	_____	_____	_____	FACW species	40 x 2 = 80
	60 = Total Cover			FAC species	85 x 3 = 255
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				FACU species	0 x 4 = 0
1. <i>Lindera benzoin</i>	30	Yes	FACW	UPL species	0 x 5 = 0
2. _____	_____	_____	_____	Column Totals	125 (A) 335 (B)
3. _____	_____	_____	_____	Prevalence Index = B/A = <u>2.7</u>	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:	
5. _____	_____	_____	_____	____ 1- Rapid Test for Hydrophytic Vegetation	
6. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
7. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹	
	30 = Total Cover			____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
Herb Stratum (Plot size: <u>5 ft</u>)				____ Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <i>Toxicodendron radicans</i>	25	Yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
2. <i>Osmundastrum cinnamomeum</i>	10	Yes	FACW	Definitions of Vegetation Strata:	
3. _____	_____	_____	_____	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
4. _____	_____	_____	_____	Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
5. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
6. _____	_____	_____	_____	Woody vines – All woody vines greater than 3.28 ft in height.	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	35 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	0 = Total Cover				

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

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC)..

SOIL

Sampling Point: GR-W1-PFO

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W1-UPL
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Undulating Slope (%): 5-10
 Subregion (LRR or MLRA): LRR R Lat: 42.227650364 Long: -71.8666996435 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID:
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL. Area is upland, not all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is not met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W1-UPL

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	40	Yes	FAC
2. <i>Quercus rubra</i>	35	Yes	FACU
3. <i>Betula alleghaniensis</i>	15	No	FAC
4. <i>Fagus grandifolia</i>	5	No	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	95 = Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)			
1. <i>Kalmia latifolia</i>	40	Yes	FACU
2. <i>Hamamelis virginiana</i>	20	Yes	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	60 = Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)			
1. <i>Dryopteris marginalis</i>	10	Yes	FACU
2. <i>Acer pensylvanicum</i>	5	Yes	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	15 = Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply By:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>55</u>	x 3 = <u>165</u>
FACU species <u>115</u>	x 4 = <u>460</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals <u>170</u>	(A) <u>625</u> (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is > 50%

____ 3 - Prevalence Index is ≤ 3.0¹

____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 or equal to 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 ____ No ✓

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

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC– or drier)..

SOIL

Sampling Point: GR-W1-UPL

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W2-PFO
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2-5
 Subregion (LRR or MLRA): LRR R Lat: 42.2290363117 Long: -71.8682658021 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 8 to 15 percent slopes, extremely stony NWI classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: GR-W2
Remarks: (Explain alternative procedures here or in a separate report) Coverttype is PFO. Area is wetland, all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>			<u>Secondary Indicators (minimum of two required)</u>		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Surface Soil Cracks (B6)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)		<input checked="" type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)		<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Shallow Aquitard (D3)		
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input checked="" type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 					
Remarks: The criterion for wetland hydrology is met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W2-PFO

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:			
	Absolute % Cover	Dominant Species?	Indicator Status				
1. <i>Acer rubrum</i>	50	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:			5 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:			5 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:			100 (A/B)
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
50 = Total Cover							
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Prevalence Index worksheet:			
	Absolute % Cover	Dominant Species?	Indicator Status	Total % Cover of:		Multiply By:	
1. <i>Vaccinium corymbosum</i>	40	Yes	FACW	OBL species	20	x 1 =	20
2. <i>Lindera benzoin</i>	20	Yes	FACW	FACW species	60	x 2 =	120
3. _____	_____	_____	_____	FAC species	50	x 3 =	150
4. _____	_____	_____	_____	FACU species	0	x 4 =	0
5. _____	_____	_____	_____	UPL species	0	x 5 =	0
6. _____	_____	_____	_____	Column Totals	130	(A)	290 (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = <u>2.2</u>			
60 = Total Cover							
Herb Stratum (Plot size: <u>5 ft</u>)				Hydrophytic Vegetation Indicators:			
	Absolute % Cover	Dominant Species?	Indicator Status				
1. <i>Osmunda spectabilis</i>	15	Yes	OBL	____ 1- Rapid Test for Hydrophytic Vegetation			
2. <i>Carex lurida</i>	5	Yes	OBL	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%			
3. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹			
4. _____	_____	_____	_____	____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
5. _____	_____	_____	_____	____ Problematic Hydrophytic Vegetation ¹ (Explain)			
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
11. _____	_____	_____	_____				
12. _____	_____	_____	_____				
20 = Total Cover							
Woody Vine Stratum (Plot size: <u>30 ft</u>)				Definitions of Vegetation Strata:			
	Absolute % Cover	Dominant Species?	Indicator Status				
1. _____	_____	_____	_____	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
2. _____	_____	_____	_____	Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.			
3. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
4. _____	_____	_____	_____	Woody vines – All woody vines greater than 3.28 ft in height.			
0 = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____			

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

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC)..

SOIL

Sampling Point: GR-W2-PFO

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W2-UPL
 Investigator(s): Greg Russo, Matt Boscow Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-10
 Subregion (LRR or MLRA): LRR R Lat: 42.2292373516 Long: -71.8683931232 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 8 to 15 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID:	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL. Area is upland, not all three wetland parameters are present..			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is not met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W2-UPL

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1. <i>Acer saccharum</i>	40	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC:	3 (A)
2. <i>Acer rubrum</i>	30	Yes	FAC	Total Number of Dominant Species Across All Strata:	4 (B)
3. <i>Carya glabra</i>	15	No	FACU	Percent of Dominant Species That Are OBL, FACW, or FAC:	75 (A/B)
4.				Prevalence Index worksheet:	
5.				Total % Cover of:	Multiply By:
6.				OBL species	0 x 1 = 0
7.				FACW species	35 x 2 = 70
	85	= Total Cover		FAC species	95 x 3 = 285
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				FACU species	55 x 4 = 220
1. <i>Lindera benzoin</i>	25	Yes	FACW	UPL species	0 x 5 = 0
2.				Column Totals	185 (A) 575 (B)
3.				Prevalence Index = B/A = <u>3.1</u>	
4.				Hydrophytic Vegetation Indicators:	
5.				___ 1- Rapid Test for Hydrophytic Vegetation	
6.				<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
7.				___ 3 - Prevalence Index is ≤ 3.0 ¹	
	25	= Total Cover		___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
Herb Stratum (Plot size: <u>5 ft</u>)				___ Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <i>Amphicarpaea bracteata</i>	60	Yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
2. <i>Osmundastrum cinnamomeum</i>	10	No	FACW	Definitions of Vegetation Strata:	
3. <i>Parathelypteris noveboracensis</i>	5	No	FAC	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
4.				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
5.				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
6.				Woody vines – All woody vines greater than 3.28 ft in height.	
7.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No ___	
8.					
9.					
10.					
11.					
12.					
	75	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft</u>)					
1.					
2.					
3.					
4.					
	0	= Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)					
The hydrophytic vegetation criterion has been met. However, due to the absence of wetland hydrology and/or hydric soils, this data point is within a non-wetland.					

SOIL

Sampling Point: GR-W2-UPL

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W3-PFO
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 5-10
 Subregion (LRR or MLRA): LRR R Lat: 42.2289590724 Long: -71.869829027 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID:	GR-W3
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: (Explain alternative procedures here or in a separate report)			
Coverttype is PFO. Area is wetland, all three wetland parameters are present..			

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
(includes capillary fringe)		
Depth (inches):		
Depth (inches):		
Depth (inches):		0
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		
The criterion for wetland hydrology is met.		

Sampling Point: GR-W3-PFO

Tree Stratum (Plot size: 30 ft)				Dominance Test worksheet:			
	Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC:			
1. <i>Acer rubrum</i>	50	Yes	FAC	5			(A)
2. <i>Fraxinus pennsylvanica</i>	20	Yes	FACW	Total Number of Dominant Species Across All Strata:			5 (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:			100 (A/B)
4. _____				Prevalence Index worksheet:			
5. _____				Total % Cover of:		Multiply By:	
6. _____				OBL species	0	x 1 =	0
7. _____				FACW species	85	x 2 =	170
	70	= Total Cover		FAC species	75	x 3 =	225
Sapling/Shrub Stratum (Plot size: 15 ft)				FACU species	0	x 4 =	0
1. <i>Lindera benzoin</i>	15	Yes	FACW	UPL species	0	x 5 =	0
2. _____				Column Totals	160	(A)	395 (B)
3. _____				Prevalence Index = B/A =			2.5
4. _____				Hydrophytic Vegetation Indicators:			
5. _____				1- Rapid Test for Hydrophytic Vegetation			
6. _____				2 - Dominance Test is >50%			
7. _____				3 - Prevalence Index is ≤ 3.0 ¹			
	15	= Total Cover		4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
Herb Stratum (Plot size: 5 ft)				Problematic Hydrophytic Vegetation ¹ (Explain)			
1. <i>Thalictrum dasycarpum</i>	50	Yes	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
2. <i>Dryopteris intermedia</i>	25	Yes	FAC	Definitions of Vegetation Strata:			
3. _____				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
4. _____				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.			
5. _____				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
6. _____				Woody vines – All woody vines greater than 3.28 ft in height.			
7. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
8. _____							
9. _____							
10. _____							
11. _____							
12. _____							
	75	= Total Cover					
Woody Vine Stratum (Plot size: 30 ft)							
1. _____							
2. _____							
3. _____							
4. _____							
	0	= Total Cover					

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

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC)..

SOIL

Sampling Point: GR-W3-PFO

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W3-PSS
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2-5
 Subregion (LRR or MLRA): LRR R Lat: 42.2282387736 Long: -71.8701679912 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: GR-W3
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is PSS. Area is wetland, all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)			
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W3-PSS

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	3 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	3 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	100 (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:	
5. _____	_____	_____	_____	Total % Cover of:	Multiply By:
6. _____	_____	_____	_____	OBL species	70 x 1 = 70
7. _____	_____	_____	_____	FACW species	150 x 2 = 300
	0 = Total Cover			FAC species	0 x 3 = 0
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				FACU species	0 x 4 = 0
1. <i>Lyonia ligustrina</i>	60	Yes	FACW	UPL species	0 x 5 = 0
2. <i>Lindera benzoin</i>	30	Yes	FACW	Column Totals	220 (A) 370 (B)
3. _____	_____	_____	_____	Prevalence Index = B/A = <u>1.7</u>	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:	
5. _____	_____	_____	_____	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
6. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
7. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹	
	90 = Total Cover			<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
Herb Stratum (Plot size: <u>5 ft</u>)				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <i>Persicaria sagittata</i>	70	Yes	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
2. <i>Eupatorium perfoliatum</i>	25	No	FACW	Definitions of Vegetation Strata:	
3. <i>Impatiens capensis</i>	25	No	FACW	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
4. <i>Onoclea sensibilis</i>	10	No	FACW	Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
5. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
6. _____	_____	_____	_____	Woody vines – All woody vines greater than 3.28 ft in height.	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	130 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	0 = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)					
A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC)..					

SOIL

Sampling Point: GR-W3-PSS

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W3-UPL1
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-10
 Subregion (LRR or MLRA): LRR R Lat: 42.22827008 Long: -71.8703143392 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID:
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL. Area is upland, not all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is not met.					

Sampling Point: GR-W3-UPL1

Tree Stratum (Plot size: 30 ft)			Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Quercus rubra</i>		50	Yes	FACU
2.	<i>Acer saccharum</i>		20	Yes	FACU
3.					
4.					
5.					
6.					
7.					
			70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Kalmia latifolia</i>		25	Yes	FACU
2.					
3.					
4.					
5.					
6.					
7.					
			25	= Total Cover	
Herb Stratum (Plot size: 5 ft)			Absolute % Cover	Dominant Species?	Indicator Status
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			0	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			Absolute % Cover	Dominant Species?	Indicator Status
1.					
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply By:
OBL species 0	x 1 = 0
FACW species 0	x 2 = 0
FAC species 0	x 3 = 0
FACU species 95	x 4 = 380
UPL species 0	x 5 = 0
Column Totals 95	(A) 380 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

1- Rapid Test for Hydrophytic Vegetation

2- Dominance Test is > 50%

3- Prevalence Index is ≤ 3.0¹

4- Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 or equal to 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 No ☒

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

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC– or drier)..

SOIL

Sampling Point: GR-W3-UPL1

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-16
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W3-UPL2
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 2-5
 Subregion (LRR or MLRA): LRR R Lat: 42.2289142292 Long: -71.8698379957 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID:
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL. Area is upland, not all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <input type="text"/>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <input type="text"/>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <input type="text"/>	
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: The criterion for wetland hydrology is not met.		

Sampling Point: GR-W3-UPL2

Tree Stratum (Plot size: 30 ft)				Dominance Test worksheet:			
Absolute % Cover	Dominant Species?	Indicator Status					
1. <i>Acer rubrum</i>	50	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)	
2. <i>Carya glabra</i>	15	Yes	FACU	Total Number of Dominant Species Across All Strata:	3	(B)	
3. <i>Fraxinus pennsylvanica</i>	10	No	FACW	Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)	
4. _____	_____	_____	_____	Prevalence Index worksheet:			
5. _____	_____	_____	_____	Total % Cover of:			
6. _____	_____	_____	_____	Multiply By:			
7. _____	_____	_____	_____	OBL species	0	x 1 = 0	
	75	= Total Cover		FACW species	10	x 2 = 20	
Sapling/Shrub Stratum (Plot size: 15 ft)				FAC species	50	x 3 = 150	
1. _____	_____	_____	_____	FACU species	85	x 4 = 340	
2. _____	_____	_____	_____	UPL species	0	x 5 = 0	
3. _____	_____	_____	_____	Column Totals	145	(A) 510 (B)	
4. _____	_____	_____	_____	Prevalence Index = B/A = 3.5			
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:			
6. _____	_____	_____	_____	___ 1- Rapid Test for Hydrophytic Vegetation			
7. _____	_____	_____	_____	___ 2 - Dominance Test is > 50%			
	0	= Total Cover		___ 3 - Prevalence Index is ≤ 3.0 ¹			
Herb Stratum (Plot size: 5 ft)				___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
1. <i>Dryopteris marginalis</i>	70	Yes	FACU	___ Problematic Hydrophytic Vegetation ¹ (Explain)			
2. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
3. _____	_____	_____	_____	Definitions of Vegetation Strata:			
4. _____	_____	_____	_____	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
5. _____	_____	_____	_____	Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.			
6. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
7. _____	_____	_____	_____	Woody vines – All woody vines greater than 3.28 ft in height.			
8. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ___ No <input checked="" type="checkbox"/>			
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
11. _____	_____	_____	_____				
12. _____	_____	_____	_____				
	70	= Total Cover					
Woody Vine Stratum (Plot size: 30 ft)							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
	0	= Total Cover					

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

No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC– or drier)..

SOIL

Sampling Point: GR-W3-UPL2

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-18
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W4-PSS
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2-5
 Subregion (LRR or MLRA): LRR R Lat: 42.2270809813 Long: -71.8675241713 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID:	GR-W4
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is PSS. Area is wetland, all three wetland parameters are present..			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Surface Soil Cracks (B6)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)		<input checked="" type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)		<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input checked="" type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	<u>0</u>		
(includes capillary fringe)					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W4-PSS

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Spiraea latifolia</i>	70	Yes	FACW	
2. <i>Lyonia ligustrina</i>	25	Yes	FACW	
3. <i>Alnus incana</i>	5	No	FACW	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	100	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Toxicodendron radicans</i>	60	Yes	FAC	
2. <i>Rubus hispidus</i>	50	Yes	FACW	
3. <i>Solidago rugosa</i>	5	No	FAC	
4. <i>Onoclea sensibilis</i>	5	No	FACW	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	120	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply By:
OBL species 0	x 1 = 0
FACW species 155	x 2 = 310
FAC species 65	x 3 = 195
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals 220	(A) 505 (B)
Prevalence Index = B/A = 2.3	

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤ 3.0¹

____ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 or equal to 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 ☒ No ____

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

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC)..

SOIL

Sampling Point: GR-W4-PSS

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Cherry Valley, Worcester Sampling Date: 2019-Oct-18
 Applicant/Owner: NGRID State: MA Sampling Point: GR-W4-UPL
 Investigator(s): Greg Russo, Matt Boscow, Russo Section, Township, Range: Leicester
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 5-10
 Subregion (LRR or MLRA): LRR R Lat: 42.2270678217 Long: -71.8673402724 Datum: WGS84
 Soil Map Unit Name: Canton fine sandy loam, 0 to 8 percent slopes, extremely stony NWI classification: None
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID:
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL. Area is upland, not all three wetland parameters are present..		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: The criterion for wetland hydrology is met.					

VEGETATION -- Use scientific names of plants.

Sampling Point: GR-W4-UPL

Tree Stratum (Plot size: 30 ft)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	2 (A)
2.				Total Number of Dominant Species Across All Strata:	4 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	50 (A/B)
4.				Prevalence Index worksheet:	
5.				Total % Cover of:	Multiply By:
6.				OBL species	0 x 1 = 0
7.				FACW species	10 x 2 = 20
	0	= Total Cover		FAC species	15 x 3 = 45
Sapling/Shrub Stratum (Plot size: 15 ft)				FACU species	65 x 4 = 260
1. <i>Kalmia latifolia</i>	50	Yes	FACU	UPL species	0 x 5 = 0
2. <i>Lyonia ligustrina</i>	10	No	FACW	Column Totals	90 (A) 325 (B)
3. <i>Rubus allegheniensis</i>	10	No	FACU	Prevalence Index = B/A = 3.6	
4.				Hydrophytic Vegetation Indicators:	
5.				___ 1- Rapid Test for Hydrophytic Vegetation	
6.				___ 2 - Dominance Test is > 50%	
7.				___ 3 - Prevalence Index is ≤ 3.0 ¹	
	70	= Total Cover		___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
Herb Stratum (Plot size: 5 ft)				___ Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <i>Solidago rugosa</i>	10	Yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
2. <i>Dryopteris intermedia</i>	5	Yes	FAC	Definitions of Vegetation Strata:	
3. <i>Pteridium aquilinum</i>	5	Yes	FACU	Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
4.				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.	
5.				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
6.				Woody vines – All woody vines greater than 3.28 ft in height.	
7.				Hydrophytic Vegetation Present? Yes ___ No <input checked="" type="checkbox"/>	
8.					
9.					
10.					
11.					
12.					
	20	= Total Cover			
Woody Vine Stratum (Plot size: 30 ft)					
1.					
2.					
3.					
4.					
	0	= Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)					
No positive indication of hydrophytic vegetation was observed (≥50% of dominant species indexed as FAC– or drier)..					

SOIL

Sampling Point: GR-W4-UPL

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Leicester, Worcester County Sampling Date: 2019-Oct-15
 Applicant/Owner: NGRID State: Massachusetts Sampling Point: DJH-W1-PFO
 Investigator(s): Dan Herzlinger, Matt Boscow Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Back slope Local relief (concave, convex, none): Concave Slope (%): 1-10
 Subregion (LRR or MLRA): _____ Lat: 42.2306005 Long: -71.8693431 Datum: WGS84
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ____ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 <input checked="" type="checkbox"/> No ____	
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No ____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No ____
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No ____	If yes, optional Wetland Site ID: W-DJH-01
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is PFO.		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>			<u>Secondary Indicators (minimum of two required)</u>		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Surface Soil Cracks (B6)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)		<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)		<input type="checkbox"/> Moss Trim Lines (B16)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)		<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input checked="" type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No ____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

VEGETATION -- Use scientific names of plants.

Sampling Point: DJH-W1-PFO

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:			
	Absolute % Cover	Dominant Species?	Indicator Status				
1. <i>Acer rubrum</i>	80	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:			6 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:			6 (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:			100 (A/B)
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
80 = Total Cover				Prevalence Index worksheet:			
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				<div> <div>Total % Cover of:</div> <div>Multiply By:</div> </div>			
1. <i>Ilex verticillata</i>	40	Yes	FACW	OBL species	0	x 1 =	0
2. <i>Lindera benzoin</i>	30	Yes	FACW	FACW species	140	x 2 =	280
3. <i>Vaccinium corymbosum</i>	30	Yes	FACW	FAC species	80	x 3 =	240
4. _____	_____	_____	_____	FACU species	0	x 4 =	0
5. _____	_____	_____	_____	UPL species	0	x 5 =	0
6. _____	_____	_____	_____	Column Totals	220	(A)	520 (B)
7. _____	_____	_____	_____	Prevalence Index = B/A = <u>2.4</u>			
100 = Total Cover				Hydrophytic Vegetation Indicators:			
Herb Stratum (Plot size: <u>5 ft</u>)				<div> <div>1- Rapid Test for Hydrophytic Vegetation</div> <div>2 - Dominance Test is >50%</div> <div>3 - Prevalence Index is ≤ 3.0¹</div> <div>4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</div> <div>Problematic Hydrophytic Vegetation¹ (Explain)</div> </div>			
1. <i>Onoclea sensibilis</i>	20	Yes	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
2. <i>Ilex verticillata</i>	20	Yes	FACW	Definitions of Vegetation Strata:			
3. _____	_____	_____	_____	<div> <div>Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</div> <div>Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.</div> <div>Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</div> <div>Woody vines – All woody vines greater than 3.28 ft in height.</div> </div>			
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
11. _____	_____	_____	_____				
12. _____	_____	_____	_____				
40 = Total Cover							
Woody Vine Stratum (Plot size: <u>30 ft</u>)							
1. _____	_____	_____	_____				
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
0 = Total Cover							
Remarks: (Include photo numbers here or on a separate sheet.)							

SOIL

Sampling Point: DJH-W1-PFO

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Stafford St. Substation City/County: Leicester, Worcester County Sampling Date: 2019-Oct-15
 Applicant/Owner: NGRID State: Massachusetts Sampling Point: DJH-W1-UPL
 Investigator(s): Dan Herzlinger, Matt Boscow Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Back slope Local relief (concave, convex, none): Convex Slope (%): 1-10
 Subregion (LRR or MLRA): _____ Lat: 42.2306769 Long: -71.8691202 Datum: WGS84
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ____ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ 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 ____ No <input checked="" type="checkbox"/>	
Hydric Soil Present?	Yes ____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes ____ No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes ____ No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report) Covertypes is UPL.		

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>			<u>Secondary Indicators (minimum of two required)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)			
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations: Surface Water Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes ____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)			Wetland Hydrology Present? Yes ____ No <input checked="" type="checkbox"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					

VEGETATION -- Use scientific names of plants.

Sampling Point: DJH-W1-UPL

Tree Stratum (Plot size: <u>30 ft</u>)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1. <i>Acer rubrum</i>	40	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2. <i>Carya ovata</i>	30	Yes	FACU	Total Number of Dominant Species Across All Strata:	6 (B)
3. <i>Quercus rubra</i>	20	Yes	FACU	Percent of Dominant Species That Are OBL, FACW, or FAC:	16.7 (A/B)
4. <i>Hamamelis virginiana</i>	10	No	FACU		
5. _____					
6. _____					
7. _____					
	100	= Total Cover		Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				Total % Cover of: Multiply By:	
1. <i>Hamamelis virginiana</i>	70	Yes	FACU	OBL species	0 x 1 = 0
2. <i>Kalmia latifolia</i>	40	Yes	FACU	FACW species	0 x 2 = 0
3. _____				FAC species	40 x 3 = 120
4. _____				FACU species	200 x 4 = 800
5. _____				UPL species	0 x 5 = 0
6. _____				Column Totals	240 (A) 920 (B)
7. _____				Prevalence Index = B/A = <u>3.8</u>	
	110	= Total Cover		Hydrophytic Vegetation Indicators:	
Herb Stratum (Plot size: <u>5 ft</u>)				_____ 1- Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is > 50% _____ 3 - Prevalence Index is ≤ 3.0 ¹ _____ 4 - 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	
1. <i>Kalmia latifolia</i>	30	Yes	FACU	Definitions of Vegetation Strata:	
2. _____				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 or equal to 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.	
3. _____				Hydrophytic Vegetation Present? Yes _____ No <u>✓</u>	
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	30	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
	0	= Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: DJH-W1-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/1	100		0			Silt Loam	
3 - 12	10YR 3/4	100					Sandy Loam	

Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains.

Location: PL = Pore Lining, M = Matrix.

Hydric Soil Indicators:						Indicators for Problematic Hydric Soils³:						
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)						
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)						
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)						
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)						
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)						
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)						
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)						
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)						
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)						
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Red Parent Material (F21)						
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Very Shallow Dark Surface (TF12)						
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Other (Explain in Remarks)						

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

Restrictive Layer (if observed):			Hydric Soil Present?	Yes ____ No <input checked="" type="checkbox"/>
Type:	None			
Depth (inches):				
Remarks:				

Appendix D: NRCS Soil Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Worcester County, Massachusetts, Southern Part

Stafford St Substation



January 10, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

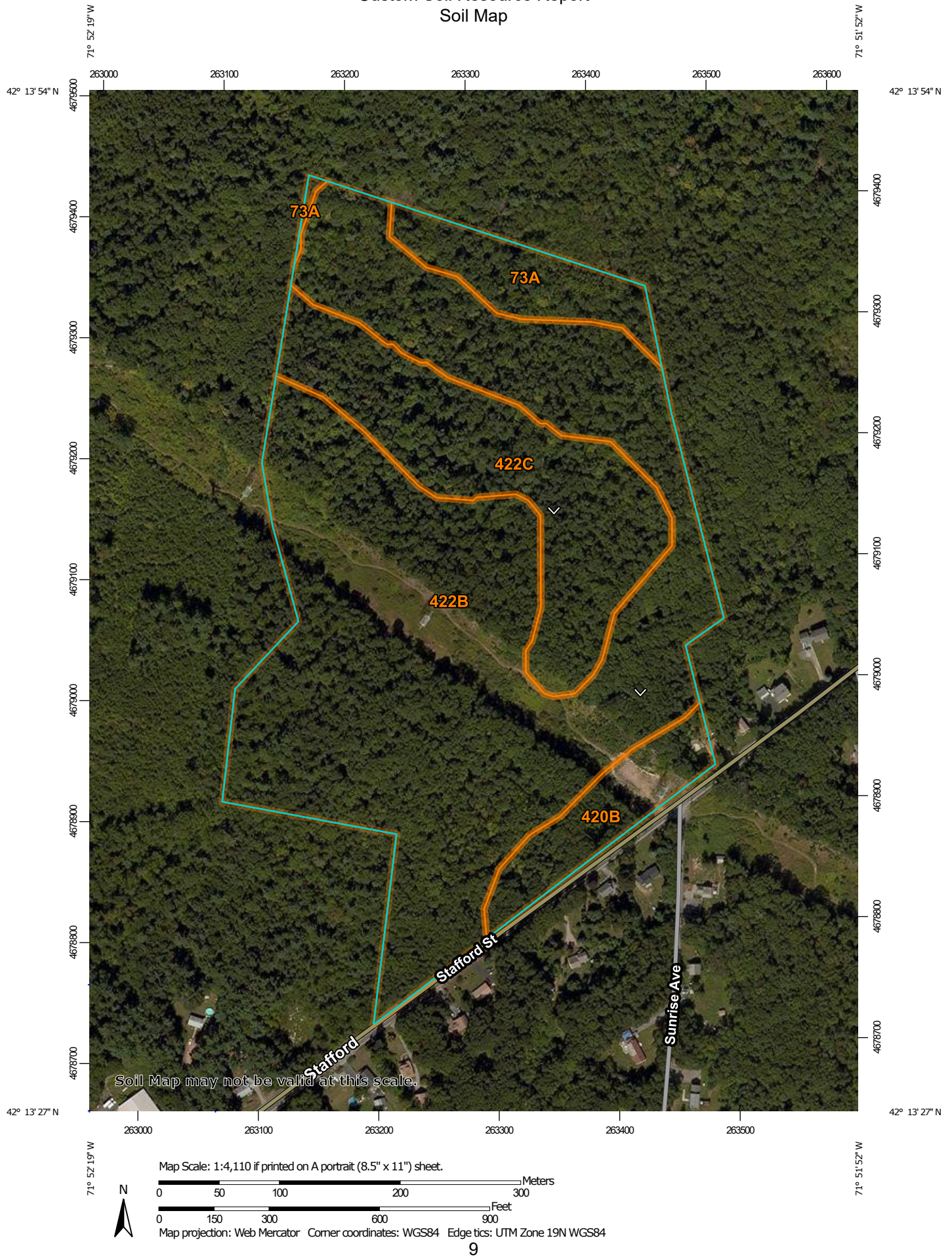
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Worcester County, Massachusetts, Southern Part
Survey Area Data: Version 12, Sep 12, 2019

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	2.7	5.9%
420B	Canton fine sandy loam, 3 to 8 percent slopes	2.7	5.8%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	31.9	69.2%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	8.8	19.1%
Totals for Area of Interest		46.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Worcester County, Massachusetts, Southern Part

73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695

Elevation: 0 to 1,580 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Whitman, extremely stony, and similar soils: 81 percent

Minor components: 19 percent

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

Description of Whitman, Extremely Stony

Setting

Landform: Drainageways, ground moraines, drumlins, hills, depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat

A - 1 to 10 inches: fine sandy loam

Bg - 10 to 17 inches: gravelly fine sandy loam

Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: 7 to 38 inches to densic material

Natural drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent
Landform: Drainageways, hills, ground moraines, drumlins, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Outwash deltas, depressions, drainageways, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Marshes, swamps, bogs
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

420B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills, ridges, moraines

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest, nose slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bw1 - 7 to 15 inches: fine sandy loam

Bw2 - 15 to 26 inches: gravelly fine sandy loam

2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Backslope, footslope, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Montauk

Percent of map unit: 5 percent

Landform: Hills, drumlins, ground moraines, moraines

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Kettles, bogs, depressions, marshes, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

422B—Canton fine sandy loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w818
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Scituate, extremely stony

Percent of map unit: 6 percent

Landform: Ground moraines, hills, drumlins

Landform position (two-dimensional): Footslope, backslope, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Charlton, extremely stony

Percent of map unit: 6 percent

Landform: Ground moraines, ridges, hills

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Swansea

Percent of map unit: 4 percent

Landform: Marshes, swamps, kettles, bogs, depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Montauk, extremely stony

Percent of map unit: 4 percent

Landform: Recessional moraines, hills, drumlins, ground moraines

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

422C—Canton fine sandy loam, 8 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w815

Elevation: 0 to 1,310 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 80 percent

Minor components: 20 percent

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

Description of Canton, Extremely Stony

Setting

Landform: Hills, moraines, ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope, crest, nose slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam

Bw1 - 5 to 16 inches: fine sandy loam

Bw2 - 16 to 22 inches: gravelly fine sandy loam

2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Scituate, extremely stony

Percent of map unit: 6 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Charlton, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Montauk, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, recessional moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Hollis, extremely stony

Percent of map unit: 4 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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Appendix E: USGS StreamStats Report

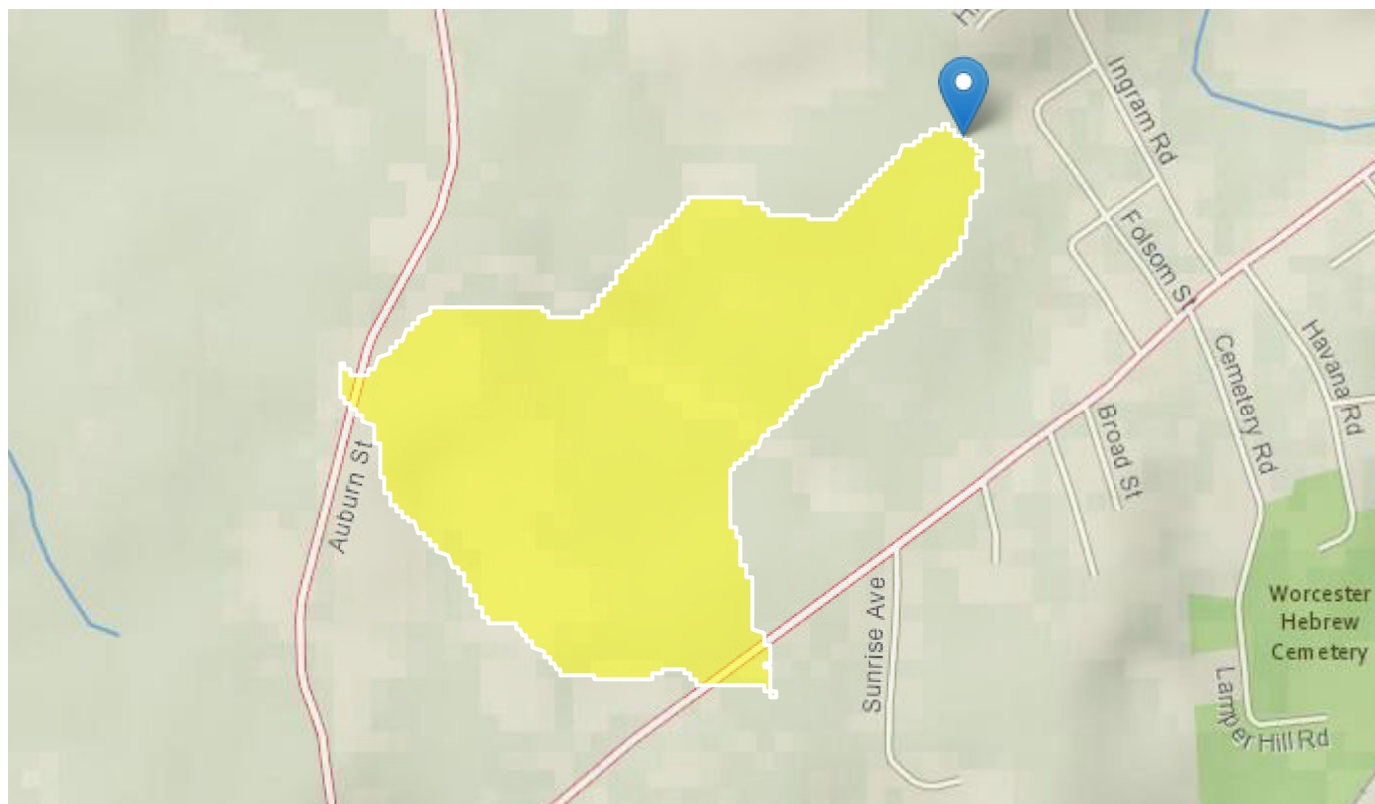
Stafford Street Sub StreamStats Report

Region ID: MA

Workspace ID: MA20200115172321674000

Clicked Point (Latitude, Longitude): 42.23293, -71.86483

Time: 2020-01-15 12:23:38 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.2	square miles
DRFTPERSTR	Area of stratified drift per unit of stream length	0	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM250	Mean basin slope computed from 1:250K DEM	4.221	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent

Parameter Code	Parameter Description	Value	Unit
FOREST	Percentage of area covered by forest	68.17	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	7.552	percent
ELEV	Mean Basin Elevation	834	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	2.22	percent
ACRSDF	Area underlain by stratified drift	0	square miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	169324.7	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	886514	meters
CRSDF	Percentage of area of coarse-grained stratified drift	0	percent
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	2.7	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.62	percent
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.9	feet per mi
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	169885	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	887005	feet
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	48.6	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0.9	miles
WETLAND	Percentage of Wetlands	4.69	percent

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
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Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	4.221	percent	0.32	24.6

Flow-Duration Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Flow-Duration Statistics Flow Report[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	0.185	ft^3/s
60 Percent Duration	0.106	ft^3/s
70 Percent Duration	0.0477	ft^3/s
75 Percent Duration	0.0331	ft^3/s
80 Percent Duration	0.0246	ft^3/s
85 Percent Duration	0.0166	ft^3/s
90 Percent Duration	0.0106	ft^3/s
95 Percent Duration	0.00546	ft^3/s
98 Percent Duration	0.00318	ft^3/s
99 Percent Duration	0.00209	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

Low-Flow Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	4.221	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00576	ft^3/s
7 Day 10 Year Low Flow	0.00169	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

August Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	4.221	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

August Flow-Duration Statistics Flow Report^[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
August 50 Percent Duration	0.017	ft ³ /s

August Flow-Duration Statistics Citations

Ries, K.G., III, 2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

Probability Statistics Parameters^[Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	0	percent	0	100
FOREST	Percent Forest	68.17	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report^[Perennial Flow Probability]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.408	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A., 2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006-5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Bankfull Statistics Parameters^[Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	7.552	percent	2.2	23.9

Bankfull Statistics Disclaimers[Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	8.07	ft
Bankfull Depth	0.602	ft
Bankfull Area	4.78	ft^2
Bankfull Streamflow	11.5	ft^3/s

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (<http://pubs.usgs.gov/sir/2013/5155/>)

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.2	square miles	0.16	512
ELEV	Mean Basin Elevation	834	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	2.22	percent	0	32.3

Peak-Flow Statistics Flow Report[Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	Pll	Plu	SEp
2 Year Peak Flood	15.7	ft ³ /s	7.78	31.6	42.3
5 Year Peak Flood	27.4	ft ³ /s	13.4	56.1	43.4
10 Year Peak Flood	37.2	ft ³ /s	17.7	78.3	44.7
25 Year Peak Flood	52.1	ft ³ /s	23.8	114	47.1
50 Year Peak Flood	64.7	ft ³ /s	28.6	147	49.4
100 Year Peak Flood	78.6	ft ³ /s	33.6	184	51.8
200 Year Peak Flood	94	ft ³ /s	38.8	227	54.1
500 Year Peak Flood	117	ft ³ /s	45.8	297	57.6

Peak-Flow Statistics Citations

Zarriello, P.J., 2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (<https://dx.doi.org/10.3133/sir20165156>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.3.11

ATTACHMENT D – Abutter Information

Abutters List

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
33 A5 0	221 AUBURN ST	PETKIEWICZ JOSEPH P	MILLETTE MARIE	221 AUBURN ST	CHERRY VALLEY MA		01611
33 A6 0	100 A TOBIN RD	CHARPENTIER JOSEPH P		PO BOX 60453	WORCESTER MA		01606
33B C7 0	30 TOBIN RD	BERGIN FRANCIS A TRUSTEE	F A BERGIN INVESTMENT TI	30 TOBIN RD	CHERRY VALLEY MA		01611
34 A1.3 0	466 STAFFORD ST	MARTIROS MICHAEL J		12 SHELTER RIDGE RD	LEICESTER MA		01524
34 A2 0	462 STAFFORD ST	MARENGO JOHN	MARENGO JEAN A	462 STAFFORD ST	CHERRY VALLEY MA		01611
34 A4 0	402 STAFFORD ST	MCCUE NANCY M		402 STAFFORD ST	CHERRY VALLEY MA		01611
34 A5 0	398 STAFFORD ST	HOURLASS PROPERTY SOLUTIC		3 BERT DR	WEST BRIDGEWATER MA		02379
34 A6 0	392 STAFFORD ST	CHARPENTIER JOSEPH		PO BOX 60453	WORCESTER MA		01606
34 A7 0	386 STAFFORD ST	TUISKULA WAYNE A	TUISKULA AMY B	386 STAFFORD STREET	CHERRY VALLEY MA		01611
34 B10 0	451 STAFFORD ST	LOLA GARY R	LOLA TARA L	451 STAFFORD ST	CHERRY VALLEY MA		01611
34 B11 0	447 STAFFORD ST	REPEKTA DEBORAH S	REPEKTA MICHAEL	447 STAFFORD ST	CHERRY VALLEY MA		01611
34 B12 0	441 STAFFORD ST	DUSSAULT LAWRENCE M	MANTHA BARRY J	441 STAFFORD STREET	CHERRY VALLEY MA		01611-3308
34 B13 0	439 STAFFORD ST	KELLEY CHRISTINE E		439 STAFFORD ST	CHERRY VALLEY MA		01611
34 B14 0	425 STAFFORD ST	FOLEY BRUCE M	FOLEY ELIZABETH M	425 STAFFORD ST	CHERRY VALLEY MA		01611
34 B9 0	STAFFORD ST	STAFFORD STREET PROPERTIES		83 KEYSTONE DR	LEOMINSTER MA		01453

End of Report

PLEASE NOTE: Abutters in the Town of Auburn

Above is a certified list of abutters and abutters to the abutters within 300 feet of subject.

Subject property: 408 Stafford Street, Assessors Map 34-A3, Deed Ref. 2328/512

Subject owner(s): New England Power Co.

Subject property: Stafford Street, Assessors Map 34-A1.1, Deed Ref. 2300/552

Subject owner(s): New England Power Co.

Sandy Genna, Principal Assessor

Prepared by: Kathleen Asquith, Assistant Assessor

02/15/2022

Town of Leicester

CONCOM NOI

Page 1 of 1

5:04:43PM

Abutters List

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
32 A13 0	280 AUBURN ST	FRASCOLLA SANTO P		280 AUBURN ST	CHERRY VALLEY	MA	01611
32 A13.2 0	286 AUBURN ST	ORSI KARIN M		286 AUBURN STREET	CHERRY VALLEY	MA	01611
32 A13.3 0	284 AUBURN ST	LEVEILLEE JAMES F	LEVEILLEE DIANE E	282 AUBURN ST	CHERRY VALLEY	MA	01611
32 A13.4 0	282 AUBURN ST	LEVEILLEE JAMES F	LEVEILLEE DIANE E	282 AUBURN ST	CHERRY VALLEY	MA	01611
32 A14 0	274 AUBURN ST	ORSI ROBERT L	ORSI ANN J	274 AUBURN ST	CHERRY VALLEY	MA	01611
33 A1 0	285 AUBURN ST	MARTIROS BEVERLY A	C/O GREG MARTIROS	P O BOX 56	OAKHAM	MA	01068
33 A2 0	275 AUBURN ST	STANICK PHILIP A		275 AUBURN ST	CHERRY VALLEY	MA	01611
33 A3 0	251 AUBURN ST	PETTERSON BERNIER JOANNE	BERNIER JR EARL J	251 AUBURN ST	CHERRY VALLEY	MA	01611
33 A4 0	247 AUBURN ST	WEBER JR KENNETH	WEBER CHRISTINE M	247 AUBURN ST	CHERRY VALLEY	MA	01611
33 A5 0	221 AUBURN ST	PETKIEWICZ JOSEPH P	MILLETTE MARIE	221 AUBURN ST	CHERRY VALLEY	MA	01611
34 A1 0	325 AUBURN ST	ANTANAVICA DEBORAH	ANTANAVICA RICHARD	325 AUBURN STREET	CHERRY VALLEY	MA	01611-3308
34 A1.3 0	466 STAFFORD ST	MARTIROS MICHAEL J		12 SHELTER RIDGE RD	LEICESTER	MA	01524
34 A1.4 0	319 AUBURN ST	BOOTS BRETA D	SAWICKI JAMES	319 AUBURN ST	CHERRY VALLEY	MA	01611
34 A1.5 0	AUBURN ST	MARTIROS MICHAEL J		12 SHELTER RIDGE RD	LEICESTER	MA	01524
34 A1.6 0	323 AUBURN ST	MORAN PATRICK K		323 AUBURN ST	CHERRY VALLEY	MA	01611

End of Report

Above is a certified list of abutters and abutters to abutters within 300 feet of subject.

Subject property: Auburn Street, Assessors Map 34-A1.11 Deed Ref. 53176/95

Subject owner(s): Michael J. Martiros

Linda Berisha, Principal Assessor

Prepared by: Kathleen Asquith, Assistant Assessor

Town of Auburn, Massachusetts

Julie A. Jacobson
Town Manager

Seth Woolard
Chief Assessor



February 18, 2022

Conservation Commission List of "Parties in Interest"

A "Party in Interest" is defined as any person, whose property line touches the petitioner's property, including property directly opposite on public or private street or way, and owners of land within 100 feet of the property line as they appear on the most recent tax maps and list in the town of Auburn.

Due to the proximity to the town line there may be additional abutters in TOWN OF LEICESTER. Attached list is for town of AUBURN ONLY.

Map: 2 Parcel: 3

Property: 3 SUNRISE AVE, AUBURN, MA 01501

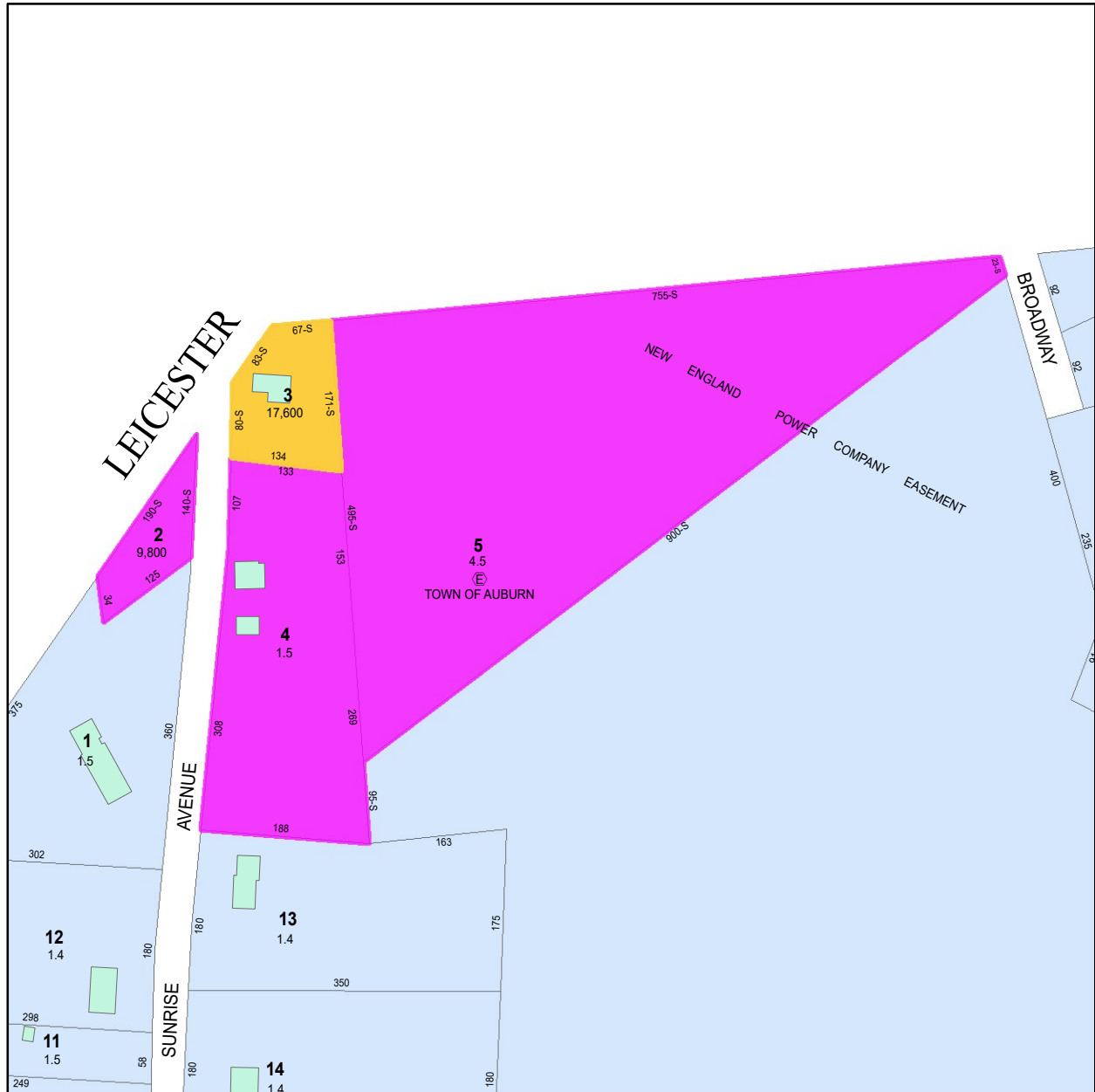
Owner: RONALD W LAFLAMME
KATHLEEN LAFLAMME
PO BOX 276
ROCHDALE, MA 01542

Signature: _____ LISA M TARGONSKI _____

Date: _____ 2/17/2022 _____

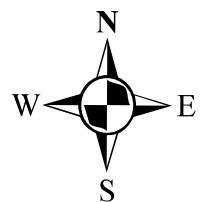
104 Central Street
Auburn, MA 01501
Telephone: (508) 832-7708
Fax: (508) 832-4259
Email: swoolard@town.auburn.ma.us
Web site: www.auburnguide.com

3 SUNRISE AVE, AUBURN (MAP 2 PARCEL 3)



LEICESTER CONSERVATION COMMISSION

Department 2



2/ 2/ / /
OSOWSKA KRYSTYNA
172 PERRY AVE
WORCESTER, MA 01610

2/ 3/ / /
LAFLAMME RONALD W
LAFLAMME KATHLEEN
P O BOX 276
ROCHDALE , MA 01542-0276

2/ 4/ / /
BOROWY QUINN
5 SUNRISE AVE
AUBURN, MA 01501

2/ 5/ / /
AUBURN TOWN OF
104 CENTRAL ST
AUBURN, MA 01501

**ATTACHMENT E – Applicable Best Management Practices (BMPs) from National
Grid Environmental Guidance Document (EG-303NE)**

SUBJECT

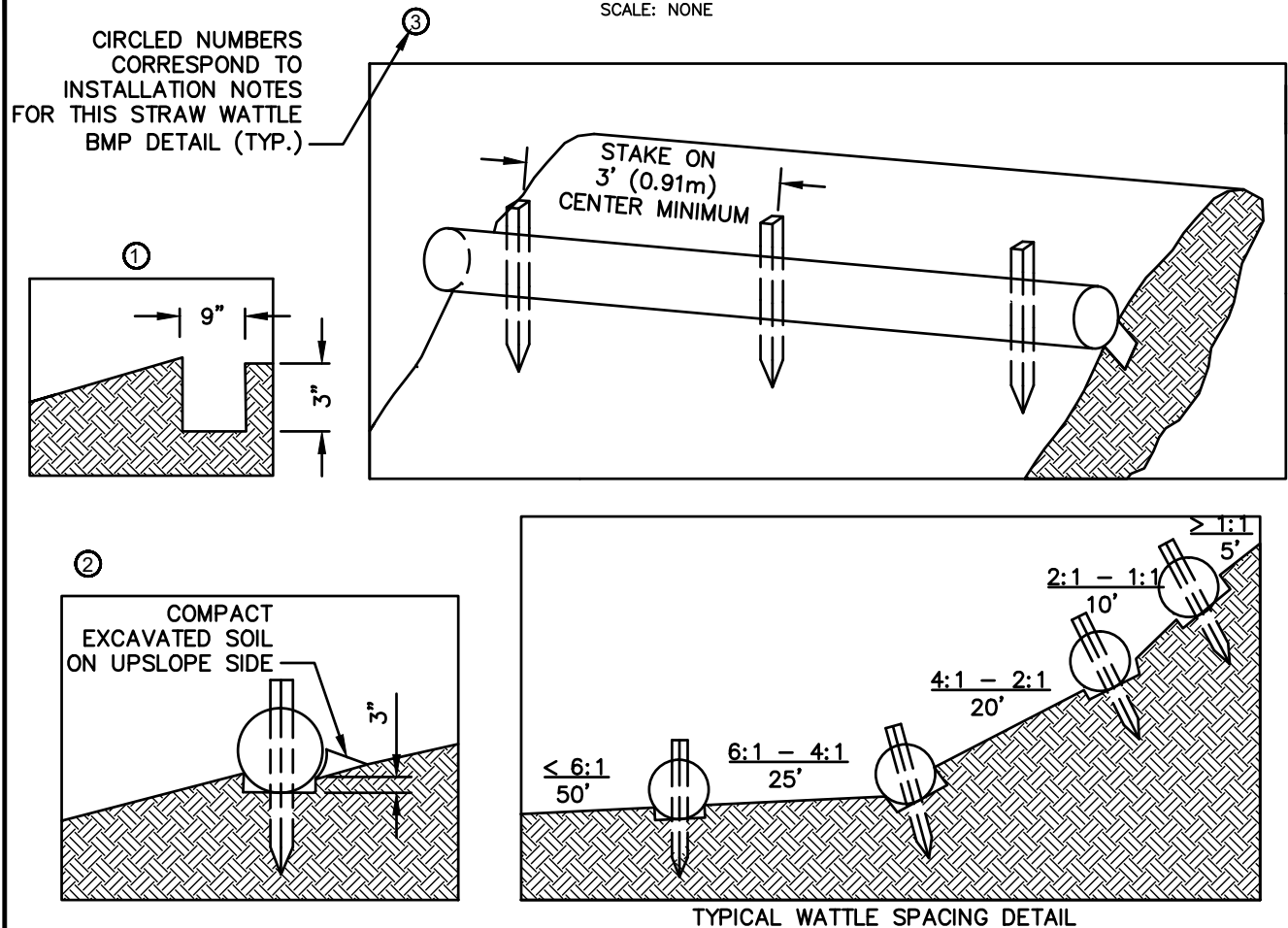
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. PRODUCT TO BE TENSAR NORTH AMERICAN GREEN STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. TYPICAL WATTLE SPACING BASED ON SLOPE GRADIENT. COORDINATE SPACING AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
3. MINIMUM 12" DIAMETER WATTLES SHOULD BE USED FOR HIGHLY DISTURBED AREAS (I.E., HEAVILY USED ACCESS ROAD WITH ADJACENT WETLAND) AND MINIMUM 9-10" WATTLES SHOULD BE USED FOR LESS DISTURBED SOILS.

INSTALLATION NOTES:

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18-24" HARDWOOD STAKES EVERY 3-4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

* DETAIL AND PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN
APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES
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VERSION PLEASE REFER TO THE NATIONAL GRID ENVIRONMENTAL INFONET SITE.

SEC-5
STRAW WATTLE * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

STRAW WATTLE – SHALLOW SLOPE ($\leq 4:1$)
(ALTERNATE STAKING)

ALTERNATE STAKING INSTALLATION NOTES:

1. ON SHALLOW SLOPES ($\leq 4:1$), STRAW WATTLE MAY BE SECURED WITH 18–24" HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4' MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS-CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW THE HEIGHT OF THE WATTLE.

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SEC-5
STRAW WATTLE * (2 OF 2)

SUBJECT

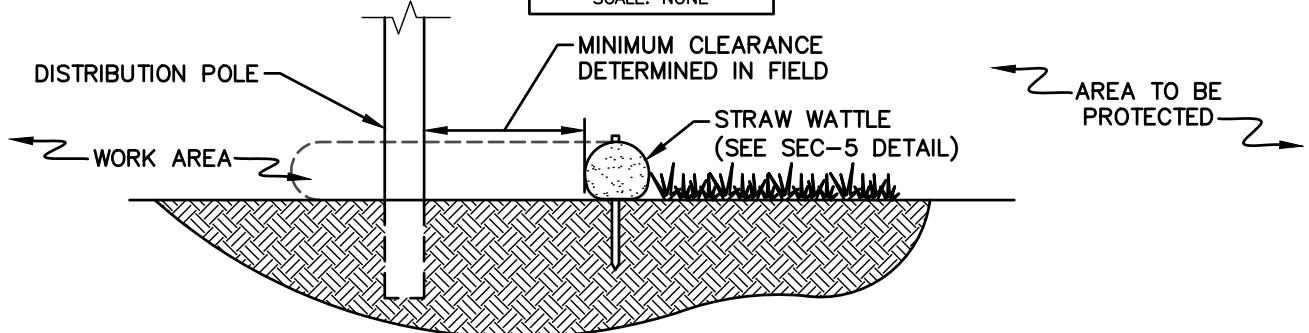
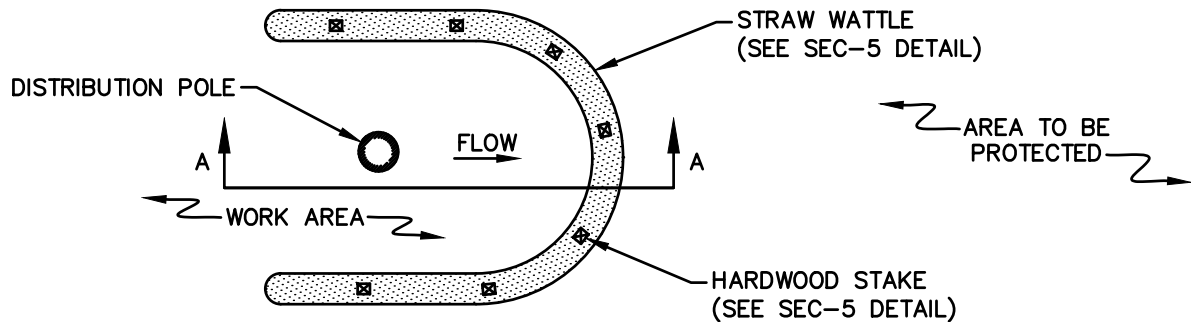
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

SECTION A-APLANNOTES

1. PRODUCT TO BE STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE SEC-5 BMP DETAIL).
2. STRAW BALE BARRIER PER SEC-1 BMP DETAIL TO BE AN AVAILABLE ALTERNATE DEPENDING ON SITE CONDITIONS AT THE DIRECTION OF NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE FIGURE 2).
3. MINIMUM CLEARANCE BETWEEN POLE AND EROSION CONTROL TO BE DETERMINED BY CONDITIONS OF POLE INSTALLATION/REPLACEMENT WORK AND ASSOCIATED DISTURBANCE.

BMP PICTURE

FIGURE 1: TYP. STRAW WATTLE APPLICATION



FIGURE 2: ALT. STRAW BALE APPLICATION

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SEC-12
**DISTRIBUTION POLE
SEDIMENT CONTROL**

SUBJECT

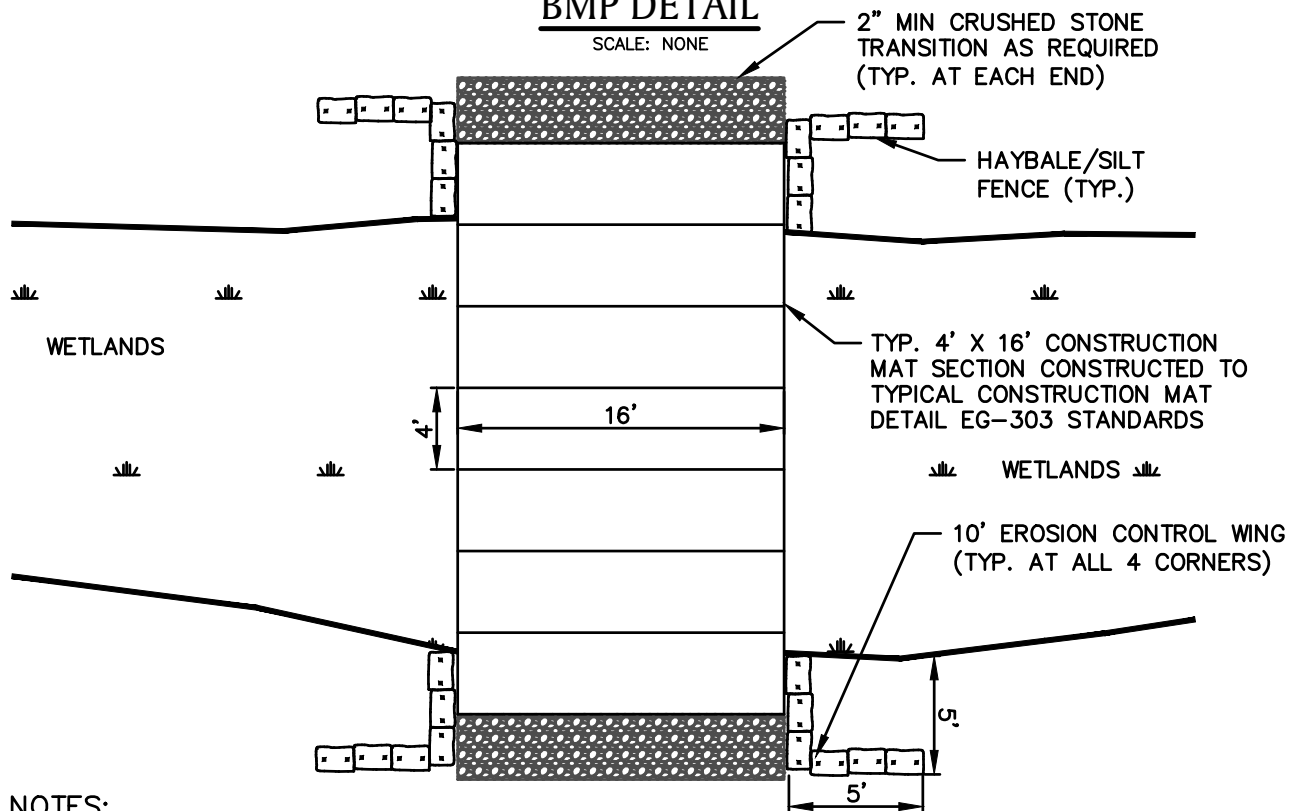
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. ADD FILTER FABRIC AS NEEDED UNDER STONE TRANSITION RAMPS.
2. ALL MEASUREMENTS AND LOCATIONS ARE APPROXIMATE.

BMP PICTURE

CM-4

CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)

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