75 State Street, Suite 701
Boston, Massachusetts 02109
tel: 617 452-6000
fax: 617 345-3901
cdmsmith.com

October 15, 2021

Ms. Shauna Little
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3962

Subject: Notice of Intent
Emergency Remedial General Permit
Shawsheen Road Well Field
Bedford, Massachusetts 01730

Dear Ms. Shauna Little:

On behalf of the Town of Bedford, CDM Smith is submitting this Notice of Intent for an Emergency Remediation General Permit for the Town of Bedford Well Field located at Shawsheen Road in Bedford, MA. Emergency Remediation General Permit authorization is sought for groundwater discharge to the Shawsheen River from three water supply wells to monitor PFAS concentrations in the source water.

Please do not hesitate to contact me at (617) 452-6721 if you have any questions or require anything further.

Very truly yours,

Nicholas Castonguay, P.G.
CDM Smith Inc.

Enclosures:

cc: Jason Raposa (Town of Bedford - Water and Sewer Operations Manager)
Jihyon Im (CDM Smith)

II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Shawsheen Road Well Field</td><td colspan="3">Site address: Shawsheen Road
Street:</td></tr>
<tr><td>City: Bedford</td><td>State: MA</td><td>Zip: 01730</td></tr>
<tr><td rowspan="4">2. Site owner
Town of Bedford Department of Public Works

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
☐ Other; if so, specify:</td><td colspan="3">Contact Person: Jason Raposa - Water and Sewer Operations Manager</td></tr>
<tr><td colspan="2">Telephone: (781) 918-4255</td><td>Email: jraposa@bedfordma.gov</td></tr>
<tr><td colspan="3">Mailing address: 314 The Great Road
Street:</td></tr>
<tr><td>City: Bedford</td><td>State: MA</td><td>Zip: 01730</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner</td><td colspan="3">Contact Person:</td></tr>
<tr><td colspan="2">Telephone:</td><td>Email:</td></tr>
<tr><td colspan="3">Mailing address:
Street:</td></tr>
<tr><td>City:</td><td>State:</td><td>Zip:</td></tr>
<tr><td colspan="2">4. NPDES permit number assigned by EPA:

NPDES permit is (check all that apply: ☐ RGP ☐ DGP ☐ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="2">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):

☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:

☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Shawsheen River	MA83-08	Class B

Receiving water is (check any that apply): ☐ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ■ Yes ☐ No

If yes, specify: Groundwater supply wells, surface water (Shawsheen River), adjacent wetlands

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. Category 5. Pollutants: D.O., E. Coli, Fecal Coliform, physical substrate habitat alterations. TMDL for bacteria.

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	1.1 CFS or 0.711 MGD
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	2.33

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ☐ Yes ■ No

If yes, indicate date confirmation received:

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ■ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	☐ Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ The receiving water ☐ A surface water other than the receiving water; if so, indicate waterbody:	■ Potable water; if so, indicate municipality or origin: Bedford Shawsheen Road Well Field ☐ Other; if so, specify:

2. Source water contaminants: PFAS Impacted Groundwater	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ■ Yes ☐ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ■ New discharge ☐ New source	
Outfall(s): Discharge to Brook Adjacent to Pump House which flows west into Shawsheen River	Outfall location(s): (Latitude, Longitude) 42.491609, -71.256391 (approximate coordinates)
Discharges enter the receiving water(s) via (check any that apply): ■ Direct discharge to the receiving water ☐ Indirect discharge, if so, specify: ☐ A private storm sewer system ☐ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ☐ Yes ■ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ☐ No, if so, explain, with an estimated timeframe for obtaining permission: Not Applicable Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): November/December 2021 through December 2022 Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ■ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
☐ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
■ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)
PFAS Compounds
☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>■ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)
PFAS Compounds
☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia								Report mg/L	---
Chloride		✓	2	EPA 300.0	5000	94,000	94,000	Report µg/l	---
Total Residual Chlorine								0.2 mg/L	11 ug/L
Total Suspended Solids								30 mg/L	---
Antimony	✓		1	EPA 200.8	2	ND	ND	206 µg/L	
Arsenic	✓		1	EPA 200.8	1	ND	ND	104 µg/L	
Cadmium	✓		1	EPA 200.8	0	ND	ND	10.2 µg/L	0.7120
Chromium III	✓		1	EPA 200.7	20	ND	ND	323 µg/L	
Chromium VI	✓		1	EPA 200.7	20	ND	ND	323 µg/L	
Copper		✓	2	EPA 200.7	5	6.8	6.8	242 µg/L	
Iron		✓	2	EPA 200.7	50	998	998	5,000 µg/L	1000
Lead								160 µg/L	16.77
Mercury	✓		1	EPA 245.1	1	ND	ND	0.739 µg/L	
Nickel	✓		1	EPA 200.7	10	ND	ND	1,450 µg/L	
Selenium	✓		1	EPA 200.8	2	ND	ND	235.8 µg/L	
Silver	✓		2	EPA 200.7	10	ND	ND	35.1 µg/L	
Zinc		✓	2	EPA 200.7	10	49	49	420 µg/L	
Cyanide	✓		1	SM4500-	10	ND	ND	178 mg/L	
B. Non-Halogenated VOCs									
Total BTEX	✓		1	EPA 524.2	<0.50	ND	ND	100 µg/L	---
Benzene	✓		1	EPA 524.2	<0.50	ND	ND	5.0 µg/L	---
1,4 Dioxane								200 µg/L	---
Acetone								7.97 mg/L	---
Phenol								1,080 µg/L	

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		2	EPA 524.2	0.50	ND	ND	4.4 µg/L	
1,2 Dichlorobenzene	✔		2	EPA 524.2	0.50	ND	ND	600 µg/L	---
1,3 Dichlorobenzene	✔		2	EPA 524.2	0.50	ND	ND	320 µg/L	---
1,4 Dichlorobenzene	✔		2	EPA 524.2	0.50	ND	ND	5.0 µg/L	---
Total dichlorobenzene	✔		2	EPA 524.2	0.50	ND	ND	763 µg/L in NH	---
1,1 Dichloroethane	✔		2	EPA 524.2	0.50	ND	ND	70 µg/L	---
1,2 Dichloroethane	✔		2	EPA 524.2	0.50	ND	ND	5.0 µg/L	---
1,1 Dichloroethylene	✔		2	EPA 524.2	0.50	ND	ND	3.2 µg/L	---
Ethylene Dibromide	✔		2	EPA 524.2	0.50	ND	ND	0.05 µg/L	---
Methylene Chloride	✔		2	EPA 524.2	0.50	ND	ND	4.6 µg/L	---
1,1,1 Trichloroethane	✔		2	EPA 524.2	0.50	ND	ND	200 µg/L	---
1,1,2 Trichloroethane	✔		2	EPA 524.2	0.50	ND	ND	5.0 µg/L	---
Trichloroethylene	✔		2	EPA 524.2	0.50	ND	ND	5.0 µg/L	---
Tetrachloroethylene	✔		2	EPA 524.2	0.50	ND	ND	5.0 µg/L	3.3
cis-1,2 Dichloroethylene	✔		2	EPA 524.2	0.50	ND	ND	70 µg/L	---
Vinyl Chloride	✔		2	EPA 524.2	0.50	ND	ND	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates								190 µg/L	
Diethylhexyl phthalate								101 µg/L	
Total Group I PAHs								1.0 µg/L	---
Benzo(a)anthracene								As Total PAHs	0.1
Benzo(a)pyrene									0.1
Benzo(b)fluoranthene									0.1
Benzo(k)fluoranthene									0.1
Chrysene									0.1
Dibenzo(a,h)anthracene									0.1
Indeno(1,2,3-cd)pyrene									0.1

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs								100 µg/L	---
Naphthalene								20 µg/L	---
E. Halogenated SVOCs									
Total PCBs								0.000064 µg/L	---
Pentachlorophenol								1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons								5.0 mg/L	---
Ethanol								Report mg/L	---
Methyl-tert-Butyl Ether	✔		2	EPA 524.2	0.50	ND	ND	70 µg/L	20
tert-Butyl Alcohol								120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether								90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
PFSA - PFHxS		✔	5		ng/L	18.8	18.8		
PFSA - PFOS		✔	5		ng/L	20.6	20.6		
PFCA - PFHpA		✔	5		ng/L	3.48	3.48		
PFCA - PFOA		✔	5		ng/L	6.73	6.73		
PFCA - PFNA	✔		5		ng/L	ND	ND		
PFCA - PFDA	✔		5		ng/L	ND	ND		
TOTAL PFAS6		✔	5		ng/L	48.76	48.76		
pH		✔	2	SM 4500	SU	6.4	6.4		
Hardness		✔	2	EPA 200.7	mg/L	56	56		
Total Dissolved Solids		✔	2	SM 2540C	mg/L	180	180		

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ☐ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption
☐ Ion Exchange ☐ Precipitation/Coagulation/Flocculation ☐ Separation/Filtration ☐ Other; if so, specify:
Not Applicable

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.
Not Applicable

Identify each major treatment component (check any that apply):
☐ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter
☐ Chemical feed tank ☐ Air stripping unit ☐ Bag filter ☐ Other; if so, specify:

Indicate if either of the following will occur (check any that apply):
☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: Water Supply Well Pump Capacity Is use of a flow meter feasible? (check one): ☐ Yes ■ No, if so, provide justification:	
Provide the proposed maximum effluent flow in gpm.	370 gpm
Provide the average effluent flow in gpm.	220 gpm
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	NA

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ☐ Yes ■ No

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

☐ Algaecides/biocides ☐ Antifoams ☐ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ☐ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ☐ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:
Not Applicable

2. Provide the following information for each chemical/additive, using attachments, if necessary:

a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): ☐ Yes ☐ No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive?
(check one): ☐ Yes ☐ No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

■ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ■ the operator ☐ EPA ☐ Other; if so, specify:

☐ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ■ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ☐ Yes ■ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

☐ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ☐ Yes ■ No

I. Supplemental information

Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Attachment 1: Groundwater Discharge Layout
Attachment 2: Water Quality Analytical Results and Effluent Limit Documentation
Attachment 3: Endangered Species Act Documentation
Attachment 4: National Historic Preservation Act Review

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement:	A BMPP will be developed and maintained in accordance with the requirements of the RGP and will be implemented prior to initial discharge.
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ■ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ■ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☐ No ☐ NA ■
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☐ No ☐ NA ■
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ■
Signature:	Date: 10/18/21
Print Name and Title:	Jason Raposa, Water and Sewer Operations Manager, Town of Bedford

Attachment No.1

Groundwater Discharge Layout

Bedford, MA
Water Main Map

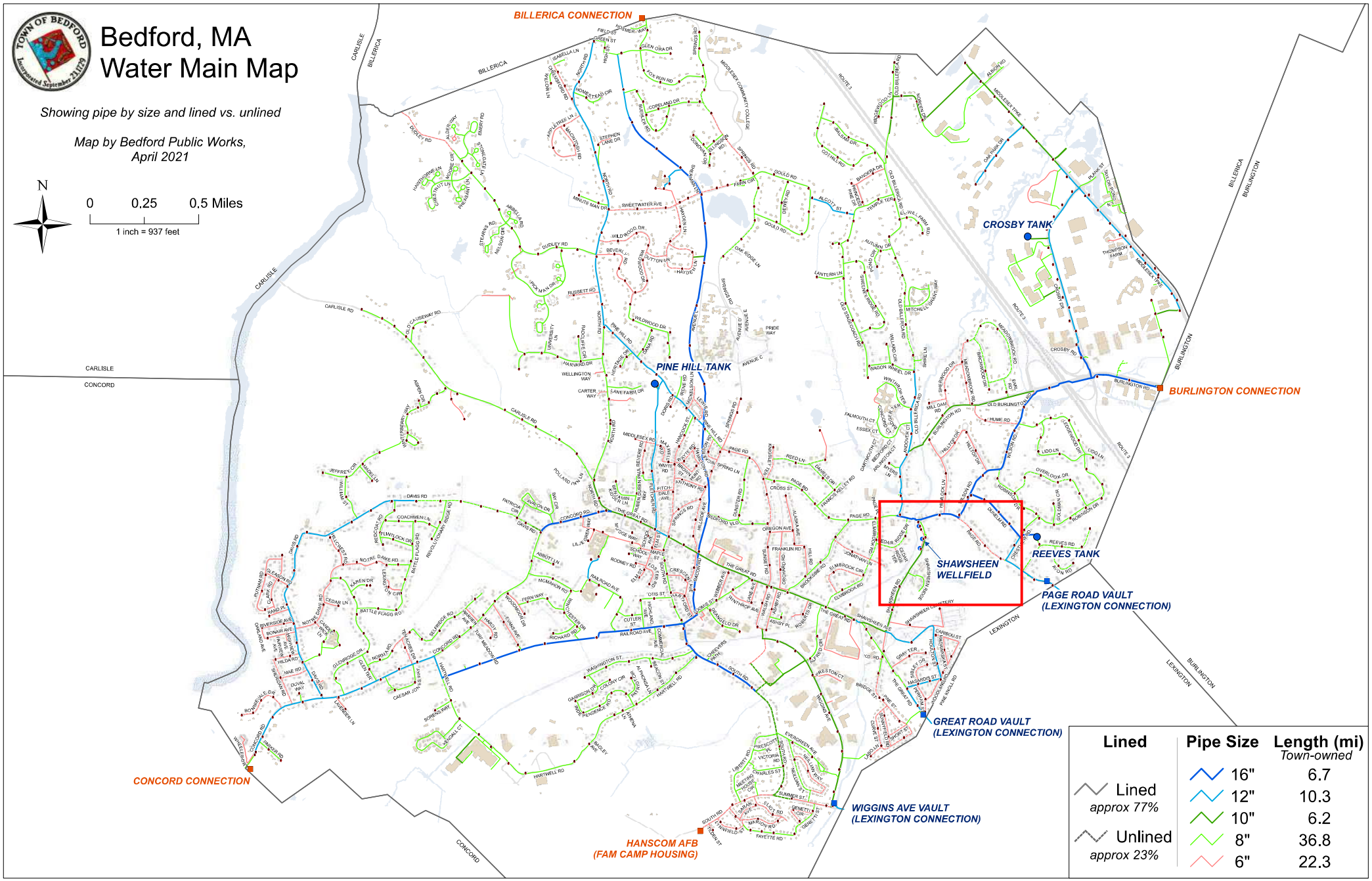
Showing pipe by size and lined vs. unlined

Map by Bedford Public Works,
April 2021

N

0 0.25 0.5 Miles

1 inch = 937 feet



Lined	Pipe Size	Length (mi) Town-owned
Lined approx 77%	16"	6.7
	12"	10.3
	10"	6.2
Unlined approx 23%	8"	36.8
	6"	22.3


PAGE PL
E RD
ELMBROOK RD
CEDAR RIDGE DR
CEDAR RIDGE TER
AN LN
HEMLOCK
WILSON R
DUNELM RD
E RD
SHAWSHEE
Shawsheen Road Well Field (Well 2, Well 4, Well 5)
SHAWSHEEN WELLFIELD

0 200 400 ft

Printed on 10/07/2021 at 11:33 AM

MapsOnline by PeopleGIS

Attachment No. 2

Water Quality Analytical Results and Effluent Limit Documentation

Table 2-1. Summary of MassDEP Regulated PFAS (ng/L): Source Wells *(red = greater than the MMCL in the source water samples)*

Well Identification	Sample Collection Date	PFSA		PFCA				Total PFAS6 (ng/L)
		PFHxS [6]	PFOS [8]	PFHpA [7]	PFOA [8]	PFNA [9]	PFDA [10]	
Shawsheen Road Wellfield - Well #2	6/24/2020	ND	2	ND	ND	ND	ND	**2**
	3/3/2021	16.9	18	3.48	6.73	ND	ND	**45.11**
	4/7/2021	18.8	20.6	3.08	6.28	ND	ND	**48.76**
	5/5/2021	13.9	15.3	2.36	4.73	ND	ND	**36.29**
	6/29/2021	10.5	12.3	ND	3.35	ND	ND	**26.15**
Shawsheen Road Wellfield - Well #4	10/7/2019	12.85	12.6	2.45	4.11	ND	ND	**32.01**
	6/24/2020	ND	2.4	ND	2.4	ND	ND	**4.8**
	9/14/2020	5.8	4.8	ND	3.3	ND	ND	**13.9**
	10/22/2020	11	13	2.5	4	ND	ND	**30.5**
	3/3/2021	2.7	3.23	ND	2.71	ND	ND	**8.64**
	4/7/2021	3.43	3.35	ND	2.52	ND	ND	**9.3**
	5/5/2021	3.48	2.93	ND	2.18	ND	ND	**8.59**
	6/10/2021	2.09	2.27	ND	ND	ND	ND	**4.36**
Shawsheen Road Wellfield - Well #5	10/7/2019	3.05	3.5	ND	2.97	ND	ND	**9.52**
	6/24/2020	ND	2.9	ND	3	ND	ND	**5.9**
	10/22/2020	2.1	2.8	ND	2.6	ND	ND	**7.5**
	3/3/2021	1.94	2.93	ND	2.44	ND	ND	**7.31**
	4/7/2021	1.74	2.29	ND	2.13	ND	ND	**6.16**
	5/5/2021	2.31	2.94	ND	2.67	ND	ND	**7.92**
	6/10/2021	ND	2.12	ND	2.03	ND	ND	**4.15**

Massachusetts Department of Environmental Protection - Drinking Water Program

Inorganic Contaminant Report

Submitted - Signed

PWS ID #: 3023000 City/Town: BEDFORD

PWS Name: BEDFORD WATER DEPT. PWS Class: COM

Primary Lab MA Cert #: M-RI015 Primary Lab Name: RI ANALYTICAL LABORATORIES INC

Location ID	Location	M/S:	D/S:	R/F:	Routine/ Special:	Collected By:	Collection Date:	O/R/C:	Resubmit Reason:	Original Collection:
10011	SHAWSHEEN GWTP	M	S		RS	JASON RAPOSA	8/14/2018	O		

Sample Comments:	Analysis Comments:	Lab Sample ID:	Sample Composited:	Composite Sample Comments:
		1808-17357-001	N	

Contaminant:	Result:	UOM:	MCL:	MDL:	Analytical Method:	Analysis Date:	Analytical Lab ID:	Analytical Lab:
ANTIMONY	ND	MG/L	0.006	0.002	EPA 200.8	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ARSENIC	ND	MG/L	0.010	0.001	EPA 200.8	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
BARIUM	0.02	MG/L	2	0.010	EPA 200.7	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
BERYLLIUM	ND	MG/L	0.004	0.001	EPA 200.7	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CADMIUM	ND	MG/L	0.005	0.000	EPA 200.8	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CHROMIUM	ND	MG/L	0.1	0.020	EPA 200.7	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CYANIDE	ND	MG/L	0.2	0.010	SM 4500-CN-C,E	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
FLUORIDE	ND	MG/L	4.0	0.050	EPA 300.0	8/15/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MERCURY	ND	MG/L	0.002	0.001	EPA 245.1	8/16/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
NICKEL	ND	MG/L	0.1	0.010	EPA 200.7	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SELENIUM	ND	MG/L	0.05	0.002	EPA 200.8	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SODIUM	56	MG/L	20	3.000	EPA 200.7	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
THALLIUM	ND	MG/L	0.002	0.001	EPA 200.8	8/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC

Primary Lab Signature: Dawne Smart

Date: 8/29/2018

EDEP Transaction ID: 1042667

Certified Signer User Name: YIHAIDING

M/S = Multiple or Single sources represented in sample site.
D/S = Distribution or Source sample site.
R/F = Raw or Finished water sample site.
MDL = Method Detection Limit.
UOM = Unit of Measurement.
O/R/C = Original submittal or Resubmitted submittal or Confirmation sample.

Massachusetts Department of Environmental Protection - Drinking Water Program

Secondary Contaminant Report

Submitted - Signed

PWS ID #: 3023000 City/Town: BEDFORD
PWS Name: BEDFORD WATER DEPT. PWS Class: COM
Primary Lab MA Cert #: M-RI015 Primary Lab Name: RI ANALYTICAL LABORATORIES INC

Location ID	Location	M/S:	D/S:	R/F:	Routine/ Special:	Collected By:	Collection Date:	O/R/C:	Resubmit Reason:	Original Collection:
005	TOWN HALL 10 MUDGE WAY	S	D		RS	JASON RAPOSA	12/19/2018	O		

Sample Comments:	Analysis Comments:	Lab Sample ID:	Sample Composited:	Composite Sample Comments:
		1812-26940-003	N	

Contaminant:	Result:	UOM:	SMCL:	MDL:	Analytical Method:	Analysis Date:	Analytical Lab ID:	Analytical Lab:
IRON	0.0573	MG/L	0.3	0.050	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MAGNESIUM	1.8	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ODOR	ND	TON	3	1.000	SM 2150B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COLOR	ND	CU	15	5.000	SM 2120B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CALCIUM	9.4	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TOTAL DISSOLVED SOLIDS	110	MG/L	500	10.000	SM 2540C	12/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SILVER	ND	MG/L	0.10	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
HARDNESS (CACO3), TOTAL	31	MG/L	None	3.300	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SULFATE	7.7	MG/L	250	1.000	EPA 300.0	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
POTASSIUM	1.4	MG/L	None	1.000	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALKALINITY (CACO3), TOTAL	45	MG/L	None	1.000	SM 2320B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MANGANESE	0.0118	MG/L	0.05*	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ZINC	ND	MG/L	5	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TURBIDITY	0.24	NTU	None	0.100	EPA 180.1	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COPPER	ND	MG/L	1	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
PH	8.5	PH AT 25C	6.5-8.5		SM 4500-H-B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CHLORIDE	52	MG/L	250	5.000	EPA 300.0	12/20/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALUMINUM	0.012	MG/L	0.2	0.005	EPA 200.8	12/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC

Location ID	Location	M/S:	D/S:	R/F:	Routine/ Special:	Collected By:	Collection Date:	O/R/C:	Resubmit Reason:	Original Collection:
08G-RW	WELL #4 - RAW WATER	S	S		RS	JASON RAPOSA	12/19/2018	O		

Sample Comments:	Analysis Comments:	Lab Sample ID:	Sample Composited:	Composite Sample Comments:
		1812-26940-002	N	

M/S = Multiple or Single sources represented in sample site.
D/S = Distribution or Source sample site.
R/F = Raw or Finished water sample site.
MDL = Method Detection Limit.
UOM = Unit of Measurement.
O/R/C = Original submittal or Resubmitted submittal or Confirmation sample.

Secondary Contaminant Report

Submitted - Signed

Contaminant:	Result:	UOM:	SMCL:	MDL:	Analytical Method:	Analysis Date:	Analytical Lab ID:	Analytical Lab:
IRON	0.850	MG/L	0.3	0.050	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MAGNESIUM	3.0	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ODOR	ND	TON	3	1.000	SM 2150B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COLOR	ND	CU	15	5.000	SM 2120B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CALCIUM	12	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TOTAL DISSOLVED SOLIDS	180	MG/L	500	10.000	SM 2540C	12/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SILVER	ND	MG/L	0.10	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
HARDNESS (CACO3), TOTAL	42	MG/L	None	3.300	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SULFATE	12	MG/L	250	1.000	EPA 300.0	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
POTASSIUM	1.8	MG/L	None	1.000	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALKALINITY (CACO3), TOTAL	17	MG/L	None	1.000	SM 2320B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MANGANESE	ND	MG/L	0.05*	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ZINC	ND	MG/L	5	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TURBIDITY	2.0	NTU	None	0.100	EPA 180.1	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COPPER	0.0068	MG/L	1	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
PH	6.4	PH AT 25C	6.5-8.5		SM 4500-H-B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CHLORIDE	89	MG/L	250	5.000	EPA 300.0	12/20/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALUMINUM	0.016	MG/L	0.2	0.005	EPA 200.8	12/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC

Location ID	Location	M/S:	D/S:	R/F:	Routine/ Special:	Collected By:	Collection Date:	O/R/C:	Resubmit Reason:	Original Collection:
09G-RW	WELL #5 - RAW WATER	S	S		RS	JASON RAPOSA	12/19/2018	O		

Sample Comments:	Analysis Comments:	Lab Sample ID:	Sample Composited:	Composite Sample Comments:
		1812-26940-001	N	

Contaminant:	Result:	UOM:	SMCL:	MDL:	Analytical Method:	Analysis Date:	Analytical Lab ID:	Analytical Lab:
IRON	0.998	MG/L	0.3	0.050	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MAGNESIUM	3.9	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ODOR	ND	TON	3	1.000	SM 2150B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COLOR	15	CU	15	5.000	SM 2120B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CALCIUM	16	MG/L	None	0.250	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TOTAL DISSOLVED SOLIDS	90	MG/L	500	10.000	SM 2540C	12/21/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
SILVER	ND	MG/L	0.10	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
HARDNESS (CACO3),	56	MG/L	None	3.300	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC

M/S = Multiple or Single sources represented in sample site.
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R/F = Raw or Finished water sample site.
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UOM = Unit of Measurement.
O/R/C = Original submittal or Resubmitted submittal or Confirmation sample.

PWS ID #: 3023000
PWS Name: BEDFORD WATER DEPT.

Secondary Contaminant Report

Submitted - Signed

TOTAL SULFATE	11	MG/L	250	1.000	EPA 300.0	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
POTASSIUM	2.2	MG/L	None	1.000	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALKALINITY (CACO3), TOTAL	22	MG/L	None	1.000	SM 2320B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
MANGANESE	0.0409	MG/L	0.05*	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ZINC	0.049	MG/L	5	0.010	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
TURBIDITY	13	NTU	None	0.100	EPA 180.1	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
COPPER	ND	MG/L	1	0.005	EPA 200.7	12/26/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
PH	6.4	PH AT 25C	6.5-8.5		SM 4500-H-B	12/19/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
CHLORIDE	94	MG/L	250	5.000	EPA 300.0	12/20/2018	M-RI015	RI ANALYTICAL LABORATORIES INC
ALUMINUM	ND	MG/L	0.2	0.005	EPA 200.8	12/28/2018	M-RI015	RI ANALYTICAL LABORATORIES INC

Primary Lab Signature: Dawne Smart

Date: 1/4/2019

EDEP Transaction ID: 1075440

Certified Signer User Name: YIHAIDING

M/S = Multiple or Single sources represented in sample site.
D/S = Distribution or Source sample site.
R/F = Raw or Finished water sample site.
MDL = Method Detection Limit.
UOM = Unit of Measurement.
O/R/C = Original submittal or Resubmitted submittal or Confirmation sample.

PWS ID #: 3023000
PWS Name: BEDFORD WATER DEPT.

R.I. ANALYTICAL
Specialists in Environmental Services

LABORATORY REPORT

Town of Bedford MA
Attn: Mr. Jason Raposa
Department of Public Works
314 Great Road
Bedford, MA 01730

Date Received: 8/7/2019
Date Reported: 8/14/2019
P.O. #:

Work Order #: 1908-14886
Project Name: QUARTERLY NITRATE NITRITE

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

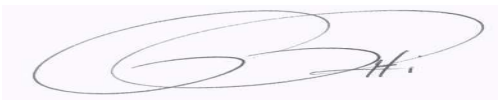
All samples were analyzed within the established guidelines of US EPA approved methods and in accordance with Massachusetts Department of Environmental Protection regulations under 310 CMR 42.00, unless otherwise noted at the end of a given sample's analytical results or in a case narrative. Laboratory certification status for a given analyte and/or method may be referenced on the enclosed Certification Summary.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:



Paul Perrotti
President

Massachusetts Department of Environmental Protection Laboratory Identification Numbers:
Warwick, RI M-RI015 Hudson, MA M-MA1117

R.I. Analytical Laboratories, Inc

Laboratory Report

Town of Bedford MA

Work Order #: 1908-14886

Project Name/PWS ID: QUARTERLY NITRATE NITRITE

Sample Number: 001
Sample Description: WELLS 4 + 5 SGWTF
Sample Type : GRAB
Sample Date / Time : 8/07/2019 @ 10:20

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED		ANALYST
Nitrite (as N)	0.17	0.05	mg/l	EPA 300.0	8/8/19	1:40	SFH
Nitrate (as N)	0.47	0.05	mg/l	EPA 300.0	8/8/19	1:40	SFH

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION CERTIFICATION SUMMARY

MICROBIOLOGY

(Warwick and Hudson Laboratories)

Non-Potable Water		Potable Water	
Warwick only Fecal Coliform (Wastewater)	SM 9221E	Heterotrophic Plate Count *	SM 9215B
Fecal Coliform (Wastewater) *	SM 9222D	Total Coliform - Water Treatment and Distribution (P/A) *	SM 9222B, SM 9223
Hudson only E. coli (Ambient, Waste Water)	SM 9223B	***Hudson only*** Total Coliform (Source Enumeration)	SM 9223B
Enterococci (Ambient, Source Water)*	Enterolert	E. coli - Treatment and Distribution (P/A), Source Enumeration *	SM 9223, SM 9222G, SM 9223B
		Enterococci - Source (P/A) *	Enterolert

**** Indicates certification at both laboratory locations***

CHEMISTRY

(Warwick Laboratory Only)

Non-Potable Water		Potable Water	
Specific Conductivity	EPA 120.1	Turbidity	EPA 180.1
Iron, Titanium, Hardness (CaCO3); Total, Calcium, Magnesium, Sodium, Potassium	EPA 200.7	Sodium, Calcium	EPA 200.7
Aluminum, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc	EPA 200.7, EPA 200.8	Barium, Beryllium, Cadmium, Chromium, Copper, Nickel, Silver	EPA 200.7, EPA 200.8
Mercury	EPA 245.1	Antimony, Arsenic, Lead, Selenium, Thallium	EPA 200.8
Nitrate, Sulfate, Chloride, Fluoride	EPA 300.0	Mercury	EPA 245.1
Ammonia	EPA 350.1, SM 4500-NH_3-B,H		
Phenolics, Total	EPA 420.1	Nitrate-N, Nitrite-N, Fluoride, Sulfate	EPA 300.0
Polychlorinated Biphenyls (Oil)	EPA 600/4-81-045	Volatile Organic Compounds, Trihalomethanes	EPA 524.2
Chlordane, Toxaphene, Aldrin, Alpha-BHC, Beta-BHC, Gamma-BHC, Delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan Sulfate, Endrin, Endrin Sulfate, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, Polychlorinated Biphenyls (Water)	EPA 608.3	Haloacetic Acids	EPA 552.2
Volatile Halocarbons, Volatile Aromatics	EPA 624.1	Alkalinity, Total	SM 2320B
SVOC– Acid Extractable, SVOC- Base/Neutral Extractable	EPA 625.1	Total Dissolved Solids	SM 2540C
Oil and Grease	EPA 1664	Chlorine, Free Residual	SM 4500-CL-G
Alkalinity; Total	SM 2320B	Cyanide, Total	SM 4500-CN-C,E
Non-Filterable Residue	SM 2540D	pH	SM 4500-H-B
Chloride	SM 4500-CL-B		
Chlorine, Total Residual	SM 4500-CL-G		
Cyanide, Total	SM 4500-CN,E		
Fluoride	SM 4500-F-B,D		
pH	SM 4500-H-B		
Kjeldahl Nitrogen	SM 4500-NORG-D		
Orthophosphate	SM 4500-P-E		
Phosphorous, Total	SM 4500-P-B,E		
Biochemical Oxygen Demand	SM 5210B		
Chemical Oxygen Demand	SM 5220D		
Total Organic Carbon	SM 5310C		

Please Note: **MA DEP does not offer certification for the soil/solid matrices or SW-846 methods.**

R.I. ANALYTICAL
Specialists in Environmental Services

CHAIN OF CUSTODY RECORD

41 Illinois Avenue
Warwick, RI 02888-3007
Tel: 800-937-2580
Fax: 401-738-1970

131 Coolidge St, Suite 105
Hudson, MA 01749-1331
Tel: 800-937-2580
Fax: 978-568-0078

Page 1 of 4

Date Collected	Time Collected	Field Sample Identification	Grab or Composite	# of Containers & Type C	Preservation Code P	Matrix Code M	Generate State Report	NITRATE	NITRITE
8-7-19	10:20 AM	WELLS 4+5 SGWTF	G	1		DW	X	X	X

06-18-19

Client Information

Company Name: Town of Bedford, Department of Public Works
Address: 314 Great Road
City / State / Zip: Bedford MA, 01730
Telephone: (781) 275-7605 Fax: (781) 275-9010
Contact Person: Mr. Jason Raposa

Project Information

Project Name: QUARTERLY NITRATE NITRITE
P.O. Number: Project Number:
Report To: Jason Raposa Cell: 978-684-2017 Fax: 781-275-9010
Sampled by: JIM MAILLE
Quote No:
Email report to these addresses: jraposa@bedfordma.gov

Relinquished By	Date	Time	Received By	Date	Time
	8-7-19	1:55PM		8/7/19	1:55PM
Erin Doherty	8-7-19	15:32		8/7/19	15:35
	8/7/19	17:35		8-7-19	1735

Turn Around Time

X	Normal	X	EMAIL Report
	5-7 Business days		
	Rush _____ (business days)		

Project Comments

3.3°

Lab Use Only

	RIAL sampled; attach field hours
X	Shipped on ice

Workorder No: 1908-14886

Containers: P=Poly, G=Glass, AG=Amber Glass, V=Vial, St=Sterile Preservatives: A=Ascorbic Acid, NH4=NH_4Cl, H=HCl, M=MeOH, N=HNO_3, NP=None, S=H_2SO_4, SB=$NaHSO_4$, SH=NaOH, T=$Na_2S_2O_3$, Z=ZnOAc
Matrix Codes: GW=Groundwater, SW=Surface Water, WW=Wastewater, DW=Drinking Water, S=Soil, SL=Sludge, A=Air, B=Bulk/Solid, O=

MICROBAC®

CERTIFICATE OF ANALYSIS

D9H0978

prepared for:

Town of Bedford

Jason Raposa
314 Great Road
Bedford, MA 01730

Project Name: DEP Samples

Project / PO Number: N/A

Received: 08/08/2019 16:45

Reported: 08/23/2019 12:04

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

Reviewed and Approved By:

Ron Warila
Director, Environmental
08/23/2019 12:04

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Massachusetts Department of Environmental Protection - Drinking Water Program

VOC

Volatile Organic Contaminant Report

I. PWS INFORMATION: Please refer to your DEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3023000 **City / Town:** Bedford

PWS Name: Town of Bedford **PWS Class:** COM ☐ NTNC ☐ TNC ☐

DEP LOCATION (LOC) ID#	DEP Location Name	Sample Information *Please note all samples are considered representative of finished water if there is no treatment applied		Date Collected	Collected By
10011	Shawsheen GWTP	☒ (M)ultiple ☐ (S)ingle	☐ (R)aw ☒ (F)inished	08/07/2019	James Maille

Routine or Special Sample	Original, Resumitted or Confirmation Report	If Resubmitted, list below	
		(1) Reason for Resubmission	(2) Collection Date of Original Sample
☒ RS ☐ SS	☐ Original ☐ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES - (Such as, if a Manifold/Multiple sample, list the sources that were on-line during sample collection).

II. ANALYTICAL LABORATORY INFORMATION

Primary Lab MA Cert. #: M-CT008 **Primary Lab Name:** Microbac Laboratories, Inc. - Dayville **Subcontract? (Y/N)** N

Analysis Lab MA Cert. #: M-CT008 **Analysis Lab Name:** Microbac Laboratories, Inc. - Dayville

Lab Method	Date Extracted (551.1 Only)	Date Analyzed	Lab Sample ID#	LAB SAMPLE NOTES - Include information as to whether sample was diluted or additional contaminants detected.
EPA 524.2, Rv 4.1		08/12/2019	D9H0978-01	
Was this Sample composited by the Lab?	**COMPOSITE SAMPLE NOTES - Please list the composite sources by DEP Source Code (XXXXXXX-XXX), up to five individual sources.**			
Yes ☐				

CAS#	REGULATED VOC CONTAMINANT	Results µg/L	MCL µg/L	MDL µg/L
71-43-2	BENZENE	<0.50	5	0.50
56-23-5	CARBON TETRACHLORIDE	<0.50	5	0.50
75-35-4	1,1-DICHLOROETHYLENE	<0.50	7	0.50
107-06-2	1,2-DICHLOROETHANE	<0.50	5	0.50
106-46-7	PARA-DICHLOROBENZENE	<0.50	75	0.50
79-01-6	TRICHLOROETHYLENE	<0.50	5	0.50
71-55-6	1,1,1-TRICHLOROETHANE	<0.50	200	0.50
75-01-4	VINYL CHLORIDE	<0.50	2	0.50
108-90-7	MONOCHLOROBENZENE	<0.50	100	0.50
95-50-1	O-DICHLOROBENZENE	<0.50	600	0.50
156-60-5	TRANS-1,2-DICHLOROETHYLENE	<0.50	100	0.50
156-59-2	CIS-1,2-DICHLOROETHYLENE	<0.50	70	0.50
78-87-5	1,2-DICHLOROPROPANE	<0.50	5	0.50
100-41-4	ETHYLBENZENE	<0.50	700	0.50
100-42-5	STYRENE	<0.50	100	0.50
127-18-4	TETRACHLOROETHYLENE	<0.50	5	0.50
108-88-3	TOLUENE	<0.50	1000	0.50
1330-20-7	XYLENES (TOTAL)	<0.50	10000	0.50
75-09-2	DICHLOROMETHANE	<0.50	5	0.50
120-82-1	1,2,4-TRICHLOROBENZENE	<0.50	70	0.50
79-00-5	1,1,2-TRICHLOROETHANE	<0.50	5	0.50

PWS ID #: 3023000 **Lab Sample ID#:** D9H0978-01

CAS#	UNREGULATED VOC CONTAMINANTS	Results µg/L	MDL µg/L
67-66-3	CHLOROFORM *	<0.50	0.50
75-27-4	BROMODICHLOROMETHANE	<0.50	0.50
124-48-1	CHLORODIBROMOMETHANE	<0.50	0.50
75-25-2	BROMOFORM	<0.50	0.50
541-73-1	M-DICHLOROBENZENE	<0.50	0.50
563-58-6	1,1-DICHLOROPROPENE	<0.50	0.50
74-95-3	DIBROMOMETHANE	<0.50	0.50
75-34-3	1,1-DICHLOROETHANE *	<0.50	0.50
79-34-5	1,1,2,2-TETRACHLOROETHANE	<0.50	0.50
142-28-9	1,3-DICHLOROPROPANE *	<0.50	0.50
74-87-3	CHLOROMETHANE	<0.50	0.50
74-83-9	BROMOMETHANE *	<0.50	0.50
96-18-4	1,2,3-TRICHLOROPROPANE	<0.50	0.50
630-20-6	1,1,1,2-TETRACHLOROETHANE	<0.50	0.50
75-00-3	CHLOROETHANE	<0.50	0.50
594-20-7	2,2-DICHLOROPROPANE	<0.50	0.50
95-49-8	O-CHLOROTOLUENE	<0.50	0.50
106-43-4	P-CHLOROTOLUENE	<0.50	0.50
108-86-1	BROMOBENZENE	<0.50	0.50
542-75-6	1,3-DICHLOROPROPENE	<0.50	0.50
95-63-6	1,2,4-TRIMETHYLBENZENE	<0.50	0.50
87-61-6	1,2,3-TRICHLOROBENZENE	<0.50	0.50
103-65-1	N-PROPYLBENZENE	<0.50	0.50
104-51-8	N-BUTYLBENZENE	<0.50	0.50
87-68-3	HEXACHLOROBUTADIENE	<0.50	0.50
108-67-8	1,3,5-TRIMETHYLBENZENE	<0.50	0.50
99-87-6	P-ISOPROPYLTOLUENE	<0.50	0.50
98-82-8	ISOPROPYLBENZENE	<0.50	0.50
98-06-6	TERT-BUTYLBENZENE	<0.50	0.50
135-98-8	SEC-BUTYLBENZENE	<0.50	0.50
91-20-3	NAPHTHALENE *	<0.50	0.50
75-69-4	FLUOROTRICHLOROMETHANE	<0.50	0.50
75-71-8	DICHLORODIFLUOROMETHANE *	<0.50	0.50
74-97-5	BROMOCHLOROMETHANE	<0.50	0.50
1634-04-4	METHYL TERTIARY BUTYL ETHER #	<0.50	0.50

Required * DEP ORSG limit established.

☐ Check this box if attaching lab report to show additional VOC results/contaminants tested.

Surrogate Name	% Recovery (70 - 130%)
4-Bromofluorobenzene	105
1,2-Dichlorobenzene-d4	103

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge

Primary Lab Director Signature: R. Wait

Date: 8/23/2019

If not submitting results electronically, mail TWO copies of this report to your DEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

DEP REVIEW STATUS (Initial & Date) ☐ Accepted ☐ Disapproved	Review Comments		☐ WQTS Data Entered

Massachusetts Department of Environmental Protection - Drinking Water Program

ClO4

Perchlorate Report

I. PWS INFORMATION: Please refer to your DEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: 3023000 **City / Town:** Bedford

PWS Name: Town of Bedford **PWS Class:** COM ☐ NTNC ☐ TNC ☐

DEP LOCATION (LOC) ID#	DEP Location Name	Sample Information *Please note all samples are considered representative of finished water if there is no treatment applied		Date Collected	Collected By
10011	Shawsheen GWTP	☒ (M)ultiple ☐ (S)ingle	☐ (R)aw ☒ (F)inished	08/07/2019	James Maille

Routine or Special Sample	Original, Resumitted or Confirmation Report	If Resubmitted, list below	
		(1) Reason for Resubmission	(2) Collection Date of Original Sample
☒ RS ☐ SS	☐ Original ☐ Resubmitted ☐ Confirmation	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES - (Such as, if a Manifold/Multiple sample, list the sources that were on-line during sample collection).

II. ANALYTICAL LABORATORY INFORMATION

Primary Lab MA Cert. #: M-CT008 **Primary Lab Name:** Microbac Laboratories, Inc. - Dayville **Subcontract? (Y/N)** Y

Analysis Lab MA Cert. #: M-MA009 **Analysis Lab Name:** Barnstable County - Water Quality Laboratory

CONTAMINANT	Result	UOM	MCL	MDL	MRL	Lab Method	Date Analyzed	Lab Sample ID#
PERCHLORATE	ND	ug/L	2.0	0.16	1	EPA 314.0, Rv 1	08/22/2019	D9H0978-02
CONDUCTIVITY	380	umhos/cm	----	1	2	EPA 120.1	08/13/2019	D9H0978-02

Perchlorate analysis requires the use of a Massachusetts DEP approved laboratory.

Perchlorate concentrations between the Minimum Detection Limit (MDL) and the Minimum Reporting Limit (MRL) must be reported as estimated (J) values (i.e perchlorate is positively present but tentatively quantified).

All field samples analyzed with either EPA Method 314.0 or EPA Method 314.1 with measured native perchlorate concentrations between 0.8 µg/L and 2.0 µg/L must be retested with and without a perchlorate spike approximately equal to the native perchlorate concentration.

LAB SAMPLE NOTES

Reanalysis and Spike Recovery (required for results between 0.8 µg/L and 2.0 µg/L or samples subject to pretreatment in method

Compound	Result (µg/L)	MDL (µg/L)	MRL (µg/L)	Spike Concentration (µg/L)	Spike Recovery (µg/L)	Lab Method	Date Analyzed
Perchlorate (reanalysis)							
Perchlorate (spike)							

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge

Primary Lab Director Signature: 

Date: 8/23/2019

If not submitting results electronically, mail TWO copies of this report to your DEP Regional Office no later than 10 days after the end of the month in which you received this report or no later than 10 days after the end of the reporting period, whichever is sooner.

DEP REVIEW STATUS (Initial & Date) ☐ Accepted ☐ Disapproved	Review Comments		☐ WQTS Data Entered

D 9 H 0 9 7 8

Town of Bedford
PM: Krysti M. Skidgell

s, Inc.
ive
1

Chain of Custody

www.microbac.com
800-334-0103

page _____ of _____

Lab WO #:

Project Manager: WS

Billing Information

CUSTOMER:
ADDRESS:
DELIVERY:
E-MAIL:
PHONE: FAX:

BILL TO: TOWN OF BEDFORD
ADDRESS: 314 GREAT RD
BEDFORD MA 01730
ATTN: JASON RAPOSA
PHONE: 781-275-7605
E-MAIL: JRAPOSA@BEDFORDMA.GOV
PURCHASE ORDER #:

Project Information

Project:
Location:
Project Mgr:
IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
E-MAIL:
PHONE:
FAX:

Sample Identification	Date Collected	Time Collected	Sample Matrix	Sample Type: Composite	Sample Type: Grab	Bottle Qty	VOC	Perchlorate	Analysis						Preservatives: NON-PRES	HCL	HNO_3	H_2SO_4	OTHER
wells 4+5	8-7-19	7:30			G	2	X												
wells 4+5	8-7-19	7:40			G	2		X											

CUSTODY TRANSFER	DATE	TIME
SAMPLER: James Maille	8-7-19	9:45
RECEIVED:		
RELINQUISHED:		
RECEIVED:	8/8/19	1055
RELINQUISHED:	8/8/19	1645
RECEIVED:	8/8/19	1645

TURNAROUND TIME REQUESTED (select): Standard RUSH ____ Day

EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

Circle Delivery Method: E-MAIL HARD COPY OTHER

COMMENTS:

CONDITIONS UPON RECEIPT: (CHECK ONE)

COOLED ☐ AMBIENT ☐ 3.8 °C Upon receipt at lab

Massachusetts Department of Environmental Protection - Drinking Water Program

Perchlorate Report

ClO_4

I. PWS INFORMATION: Please refer to your DEP Water Quality Sampling Schedule (WQSS) to help complete this form

PWS ID #: | **City / Town:** Dayville

PWS Name: Microbac Laboratory, LLC | **PWS Class:** COM ☑ NTNC ☐ TNC ☐

DEP LOCATION (LOC) ID#	DEP Location Name	Sample Information		Date Collected	Collected By
	D9H0978	☐ (M)ultiple ☑ (S)ingle	☐ (R)aw ☐ (F)inished	8/7/2019	Customer

Routine or Special Sample	Original or Resubmitted Report	If resubmitted Report, list below:	
		(1) Reason for Resubmission	(2) Collection Date of Original Sample
☐ RS ☑ SS	☑ Original ☐ Resubmitted	☐ Resample ☐ Reanalysis ☐ Report Correction	

SAMPLE NOTES - (Such as, if a Manifold/Multiple sample, list any sources that were on-line during collection.)

II. ANALYTICAL LABORATORY INFORMATION:

Primary Lab MA Cert. #: M-MA009 **Primary Lab Name:** Barnstable County Health Laboratory **Subcontracted? (Y/N)** N

Analysis Lab MA Cert. #: **Analysis Lab Name:**

CONTAMINANT	Result	UOM	MCL	MDL	MRL	Lab Method	Date Analyzed	Lab Sample ID#
PERCHLORATE	ND	µg/L	2.0	0.16	1.0	EPA 314.0	8/22/2019	1911596701
CONDUCTIVITY	380	µmhos/cm	--	1.0	2.0	EPA 120.1	8/13/2019	1911596701

Perchlorat analysisrequires the use of a Massachusetts DEP approved laboratory.

Perchlorate concentrationsbetween the Minimum Detection Limit (MDL) and the Minimum Reporting Lavel (MRL) must be reported as estimated (J) values. , (I.e ,perchlorate is positively present but tentatively quantified).

All field samples analyzed with either EPA Method 314.0 or EPA Method 314.1 with measured native perchlorate concentrations between 0.8 µg/L and 2.0 µg/L must be retested with and without a perchlorate spike approximately equal to the native perchlorate concentration.

LAB SAMPLE NOTES

Reanalysis and Spike Recovery (required for results between 0.8ug/L and 2.0 ug/L or samples subject to pretreatment in method EPA 314.0)

Compound	Result (µg/L)	MDL (µg/L)	MRL (µg/L)	Spike Concentration (µg/L)	Spike Recovery %	Lab Method	Date Analyzed
Perchlorate (Reanalysis)							
Perchlorate (Spike)							

I certify, under penalties of law, that I am the person authorized to fill out this form, and the information contained herein is true, accurate, and complete to the best extent of my knowledge.

Primary Lab Director Signature: [signature]

Date: 23AUG19

If not submitting these results electronically, mail TWO copies of this report to your DEP Regional Office no later than 10 days after the end of the month in which you received this report, or no later than 10 days after the end of the reporting period, whichever is sooner.

DEP REVIEW STATUS (Initial and Date)			
☐ Accepted _____ ☐ Disapproved _____	Review Comments		☐ WQTS Data Entered

Microbac Laboratories, Inc. - Dayville

MICROBAC®

SUBCONTRACT ORDER

D9H0978

SENDING LABORATORY:

Microbac Laboratories, Inc. - Dayville
61 Louisa Viens Drive
Dayville, CT 06241
Phone: 860.774.6814
Lab Manager: Krysti M. Skidgell
Email: krysti.skidgell@microbac.com

RECEIVING LABORATORY:

Barnstable County - Water Quality Laboratory
PO Box 427/3195 Main Street
Barnstable, MA 02630
Phone: 508-375-6605

Project Info:

Project Type: ENV-DrinkingWater
Project Location: Massachusetts
Report TAT: # 14
Due: **08/15/2019 17:00**

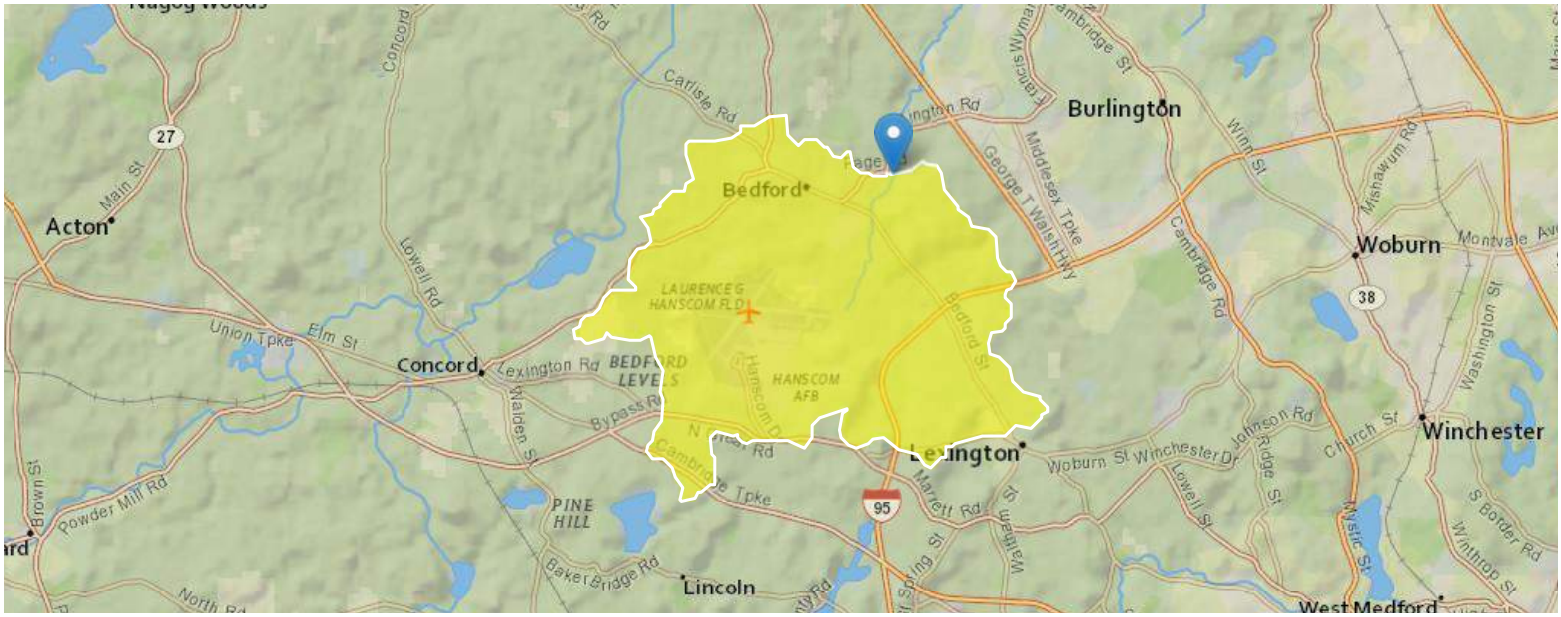
Sample ID: D9H0978-02
Matrix: Drinking Water
Sampled: 08/07/2019 07:40
Sampler: James Maille

Analysis	Method	Analysis Due	Expires
Conductivity EPA 120	EPA 120.1	08/15/2019 16:00	09/04/2019 07:40
Perchlorate 314	EPA 314.0, Rv 1	08/15/2019 16:00	09/04/2019 07:40

Released By	Date	Received By	Date
	8-12-19 15:38		8.12.19 12:45
Released By	Date	Received By	Date

StreamStats Reports - Shawsheen Road Well Field Discharge to Shawsheen River - Bedford, MA

Region ID: MA
Workspace ID: MA20211006195505280000
Clicked Point (Latitude, Longitude): 42.49291, -71.25664
Time: 2021-10-06 15:55:25 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	13.8	square miles
ELEV	Mean Basin Elevation	160	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	12.96	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.72	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.44	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM10M	Mean basin slope computed from 10 m DEM	3.928	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	25.15	percent
FOREST	Percentage of area covered by forest	31.36	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	0.16	512
ELEV	Mean Basin Elevation	160	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	12.96	percent	0	32.3

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

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

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	266	ft^3/s	136	519	42.3
20-percent AEP flood	431	ft^3/s	218	852	43.4
10-percent AEP flood	559	ft^3/s	276	1130	44.7
4-percent AEP flood	742	ft^3/s	355	1550	47.1
2-percent AEP flood	893	ft^3/s	414	1930	49.4
1-percent AEP flood	1050	ft^3/s	472	2340	51.8
0.5-percent AEP flood	1220	ft^3/s	532	2800	54.1
0.2-percent AEP flood	1460	ft^3/s	608	3500	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)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.72	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.44	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

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

Statistic	Value	Unit	PII	PIu	SE	ASEp
7 Day 2 Year Low Flow	2.29	ft^3/s	0.708	7.13	49.5	49.5
7 Day 10 Year Low Flow	1.1	ft^3/s	0.272	4.15	70.8	70.8

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/)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.44	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	1.72	percent	0.32	24.6

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

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

Statistic	Value	Unit	PII	PIu	SE	ASEp
50 Percent Duration	13.9	ft^3/s	8.24	23.3	17.6	17.6
60 Percent Duration	11.1	ft^3/s	3.71	33	19.8	19.8
70 Percent Duration	8.08	ft^3/s	3.07	21	23.5	23.5

Statistic	Value	Unit	PII	Plu	SE	ASEp
75 Percent Duration	6.64	ft^3/s	2.63	16.6	25.8	25.8
80 Percent Duration	5.93	ft^3/s	2.46	14.1	28.4	28.4
85 Percent Duration	4.51	ft^3/s	1.71	11.7	31.9	31.9
90 Percent Duration	3.78	ft^3/s	1.44	9.71	36.6	36.6
95 Percent Duration	2.24	ft^3/s	0.711	6.82	45.6	45.6
98 Percent Duration	1.49	ft^3/s	0.421	4.99	60.3	60.3
99 Percent Duration	1.14	ft^3/s	0.3	4.07	65.1	65.1

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/)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.72	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.44	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

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

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	ASEp
August 50 Percent Duration	4.94	ft^3/s	1.83	13.1	33.2	33.2

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/)

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	3.928	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

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

Statistic	Value	Unit	ASEp
Bankfull Width	38.1	ft	21.3
Bankfull Depth	1.87	ft	19.8
Bankfull Area	70.7	ft^2	29
Bankfull Streamflow	170	ft^3/s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	45.2	ft
Bieger_D_channel_depth	2.38	ft
Bieger_D_channel_cross_sectional_area	109	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	52.7	ft
Bieger_P_channel_depth	2.45	ft
Bieger_P_channel_cross_sectional_area	132	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	31.2	ft
Bieger_USA_channel_depth	2.11	ft
Bieger_USA_channel_cross_sectional_area	70.5	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

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

Statistic	Value	Unit	ASEp
Bankfull Width	38.1	ft	21.3
Bankfull Depth	1.87	ft	19.8
Bankfull Area	70.7	ft^2	29
Bankfull Streamflow	170	ft^3/s	55
Bieger_D_channel_width	45.2	ft	
Bieger_D_channel_depth	2.38	ft	
Bieger_D_channel_cross_sectional_area	109	ft^2	
Bieger_P_channel_width	52.7	ft	
Bieger_P_channel_depth	2.45	ft	
Bieger_P_channel_cross_sectional_area	132	ft^2	
Bieger_USA_channel_width	31.2	ft	
Bieger_USA_channel_depth	2.11	ft	
Bieger_USA_channel_cross_sectional_area	70.5	ft^2	

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/)
Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.8	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	25.15	percent	0	100
FOREST	Percent Forest	31.36	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers [Perennial Flow Probability]

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

Probability Statistics Flow Report [Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.993	dim

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)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Shawsheen Road Well Field
Shawsheen Road
Bedford, MA
Dilution Factor Calculations

Purpose: Calculate Dilution Factor for the project based on 7 Day 10 Year (7Q10) Flow Flow Values

Approach: Calculate Dilution Factor based on EPA Formula (Qs+Qd)/Qd, where Qs is 7Q10 in million gallons per day (MGD) and Qd is discharge flow in MGD.

Assumptions:
1) 7Q10 is 1.1 cfs (StreamStats)
2) A conversion of 7.48 is used to convert cubic feet to gallons
3) A discharge flow rate of 370 gpm is assumed

Calculations:

7Q10 Low Flow Values (Qs)

$$Qs = \frac{1.1\ ft^3}{sec} \times \frac{7.48\ gallons}{ft^3} \times \frac{86{,}400\ sec}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

$$Qs = 0.711$$

Discharge Flowrate (Qd)

$$Qd = \frac{370\ gallons}{min} \times \frac{1{,}440\ min}{day} \times \frac{1\ MG}{1{,}000{,}000\ gallons}$$

$$Qd = 0.5328$$

Dilution Factor (DF)

$$DF = \frac{Qs + Qd}{Qd} = \frac{0.711\ MGD + 0.533\ MGD}{0.533\ MGD} = \mathbf{2.33}$$

Results: The dilution factor for this project is calculated to be 2.33 based on the provided 7Q10 low flow value and discharge flowrate.

Enter number values in green boxes below

Enter values in the units specified

↓

0	Q_R = Enter upstream flow in **MGD**
0.533	Q_P = Enter discharge flow in **MGD**
0	Downstream 7Q10

Enter a dilution factor, if other than zero

↓

2.33

Enter values in the units specified

↓

56	C_d = Enter influent hardness in **mg/L** $CaCO_3$
	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Enter **receiving water** concentrations in the units specified

↓

	pH in **Standard Units**
	Temperature in **°C**
	Ammonia in **mg/L**
	Hardness in **mg/L** $CaCO_3$
	Salinity in **ppt**
	Antimony in **µg/L**
	Arsenic in **µg/L**
	Cadmium in **µg/L**
	Chromium III in **µg/L**
	Chromium VI in **µg/L**
	Copper in **µg/L**
	Iron in **µg/L**
	Lead in **µg/L**
	Mercury in **µg/L**
	Nickel in **µg/L**
	Selenium in **µg/L**
	Silver in **µg/L**
	Zinc in **µg/L**

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
0	Ammonia in **mg/L**
0	Antimony in **µg/L**
0	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
6.8	Copper in **µg/L**
998	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
49	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
0	Total Phthalates in **µg/L**
0	Diethylhexylphthalate in **µg/L**
0	Benzo(a)anthracene in **µg/L**
0	Benzo(a)pyrene in **µg/L**
0	Benzo(b)fluoranthene in **µg/L**
0	Benzo(k)fluoranthene in **µg/L**
0	Chrysene in **µg/L**
0	Dibenzo(a,h)anthracene in **µg/L**
0	Indeno(1,2,3-cd)pyrene in **µg/L**
0	Methyl-tert butyl ether in **µg/L**

Dilution Factor	1.0					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**11**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	640	µg/L		
Arsenic	104	µg/L	**10**	µg/L		
Cadmium	10.2	µg/L	**0.7120**	µg/L		
Chromium III	**323**	µg/L	251.1	µg/L		
Chromium VI	**323**	µg/L	11.4	µg/L		
Copper	**242**	µg/L	28.5	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	160	µg/L	**16.77**	µg/L		
Mercury	**0.739**	µg/L	0.91	µg/L		
Nickel	**1450**	µg/L	157.4	µg/L		
Selenium	**235.8**	µg/L	5.0	µg/L		
Silver	**35.1**	µg/L	35.8	µg/L		
Zinc	**420**	µg/L	362.2	µg/L		
Cyanide	**178**	mg/L	5.2	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	300	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	1.6	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	5.0	µg/L	**3.3**	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	2.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(a)pyrene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Benzo(k)fluoranthene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Chrysene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Dibenzo(a,h)anthracene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	**0.0038**	µg/L	0.1	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	70	µg/L	**20**	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

Attachment No.3

Endangered Species Act Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: October 15, 2021
Consultation Code: 05E1NE00-2022-SLI-0030
Event Code: 05E1NE00-2022-E-00538
Project Name: Shawsheen Road Well Field - Bedford MA

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2022-SLI-0030
Event Code: Some(05E1NE00-2022-E-00538)
Project Name: Shawsheen Road Well Field - Bedford MA
Project Type: ** OTHER **
Project Description: The project is located at the Town of Bedford MA water well supply field located on Shawsheen Road in Bedford, MA. The scope of the project includes discharging groundwater from the well supply field (well 2) to the adjacent Shawsheen River. The project will start in November/ December 2021 and will be completed in December 2022.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.49166135,-71.25589472035058,14z

Counties: Middlesex County, Massachusetts

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Endangered Species Act Review

DETERMINATION KEY

Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency

Release date: December 29, 2020

You completed the latest version of this key, published March 28, 2019, and reached a determination of not applicable for species or critical habitats covered by the key.

Federal agencies should use this determination key to avail themselves of the optional streamlined consultation framework for the northern long-eared bat, which is provided in the Service's January 2016 biological opinion. Use of this IPaC determination key is necessary to: (1) notify the USFWS that an action agency will use the streamlined framework and (2) describe the project with sufficient detail to support the required determination. The key is intended for consultation on discrete projects - not for programmatic consultation.

To use this key, agencies must provide project-level documentation. Users must provide a description of the proposed project and the action area with sufficient detail to support the determination.

Users who are not with or representing Federal agencies can use this determination key to ensure that their actions are consistent with the northern long-eared bat 4(d) rule.

Species covered by this key

This key covers the following species expected to occur in this project area:

Northern Long-eared Bat *Myotis septentrionalis*

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

Qualification interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   ☑ Yes

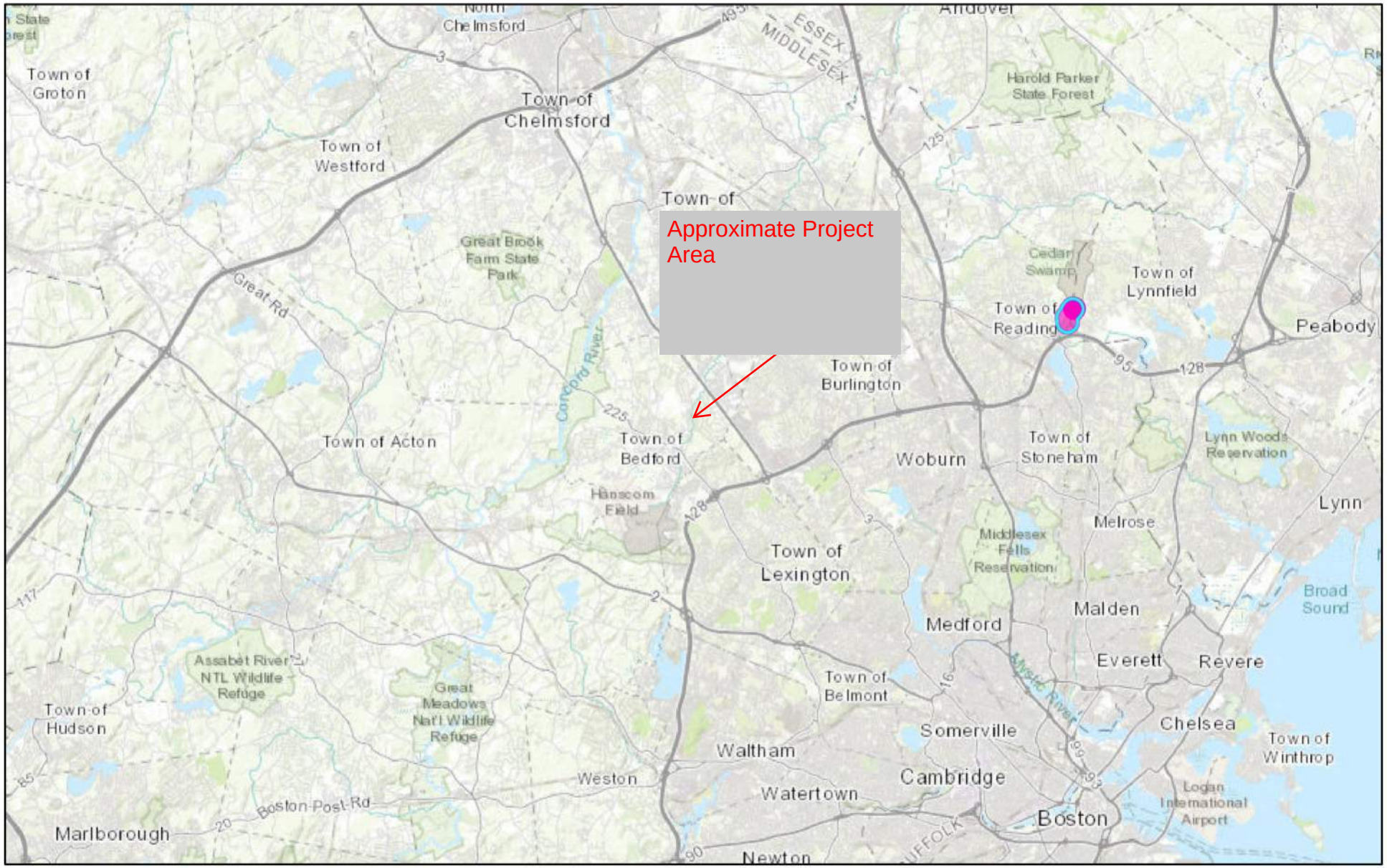
2. Have you determined that the proposed action will have “no effect” on the northern long-eared bat? (If you are unsure select "No")

   ⊘ Yes

When the action agency determines its proposed action will not affect a listed species, there is no need to coordinate further with the Service. If the northern long-eared bat will not be exposed directly or indirectly to the proposed action or any resulting environmental changes, an agency should conclude "no effect" and document the finding and this completes the section 7 process. For example, if suitable habitat is not present in the action area and the project does not otherwise present a risk to the species, conclude "species not present" and document your finding.

If you no longer wish to use this key for your project, you can delete your evaluation.

National Heritage Inventory - Northern Long Eared Bat



October 15, 2021

Statewide_NLEB_Symbology

- Hibernaculum
- MA Northern Long-eared Bat Winter Hibernacula (with ¼ mile buffer)

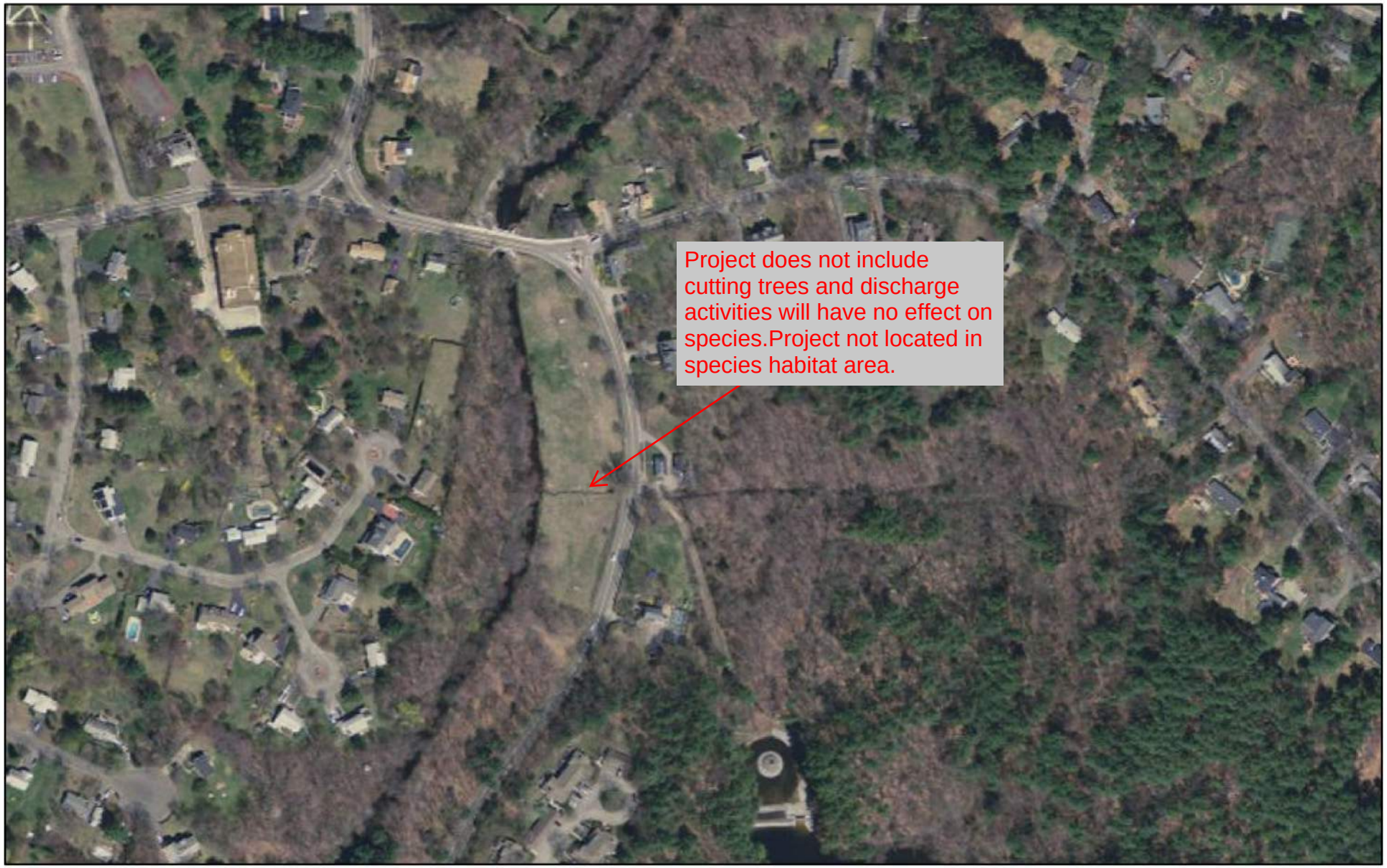
1:288,895

0 1.75 3.5 7 mi

0 2.75 5.5 11 km

MassGIS, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

National Heritage Inventory - Northern Long Eared Bat



October 15, 2021

NHESP Priority Habitats of Rare Species

World Boundaries and Places

1:4,514

0 0.03 0.06 0.11 mi

0 0.04 0.09 0.18 km

MassGIS, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA,

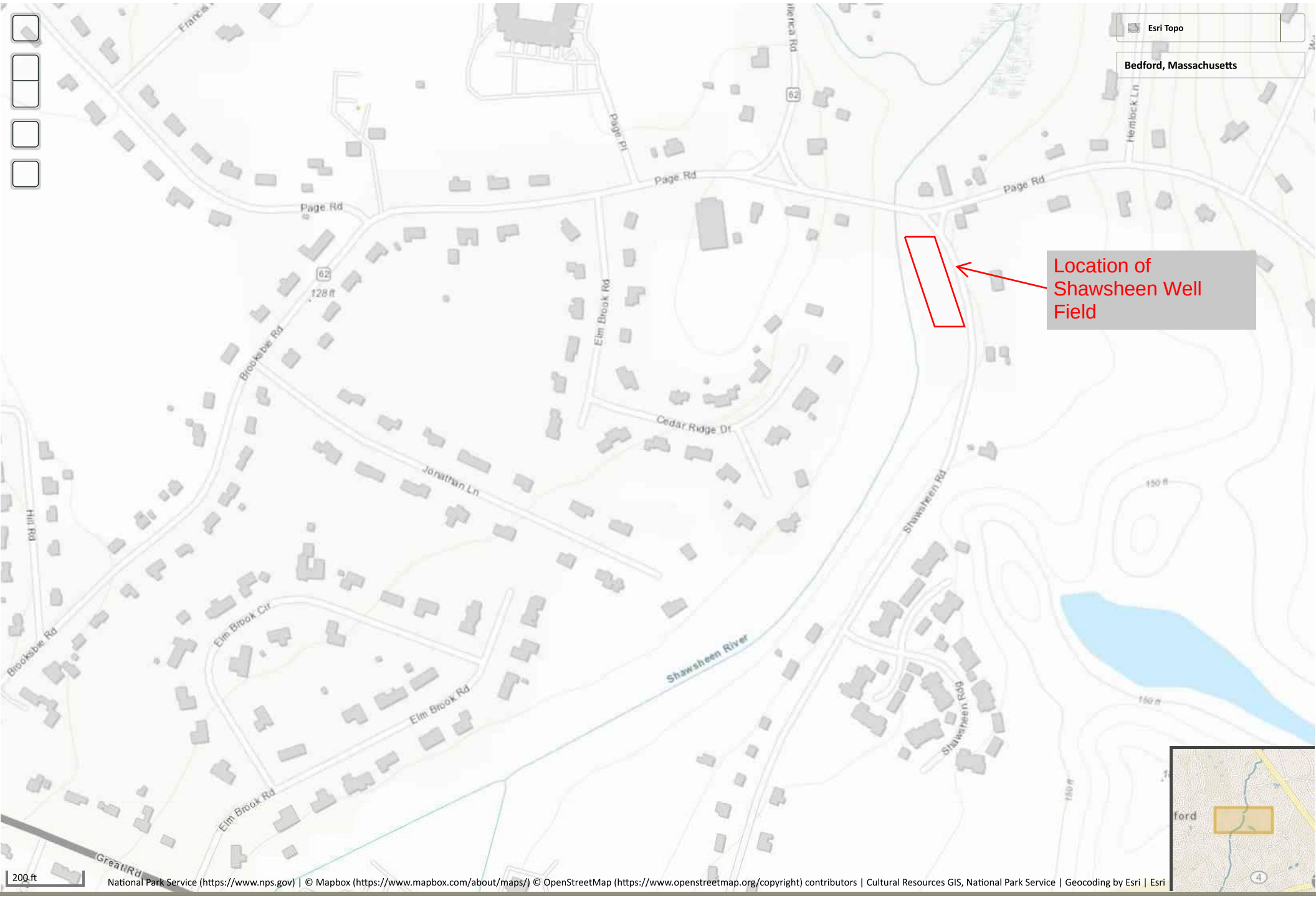
Attachment No.4

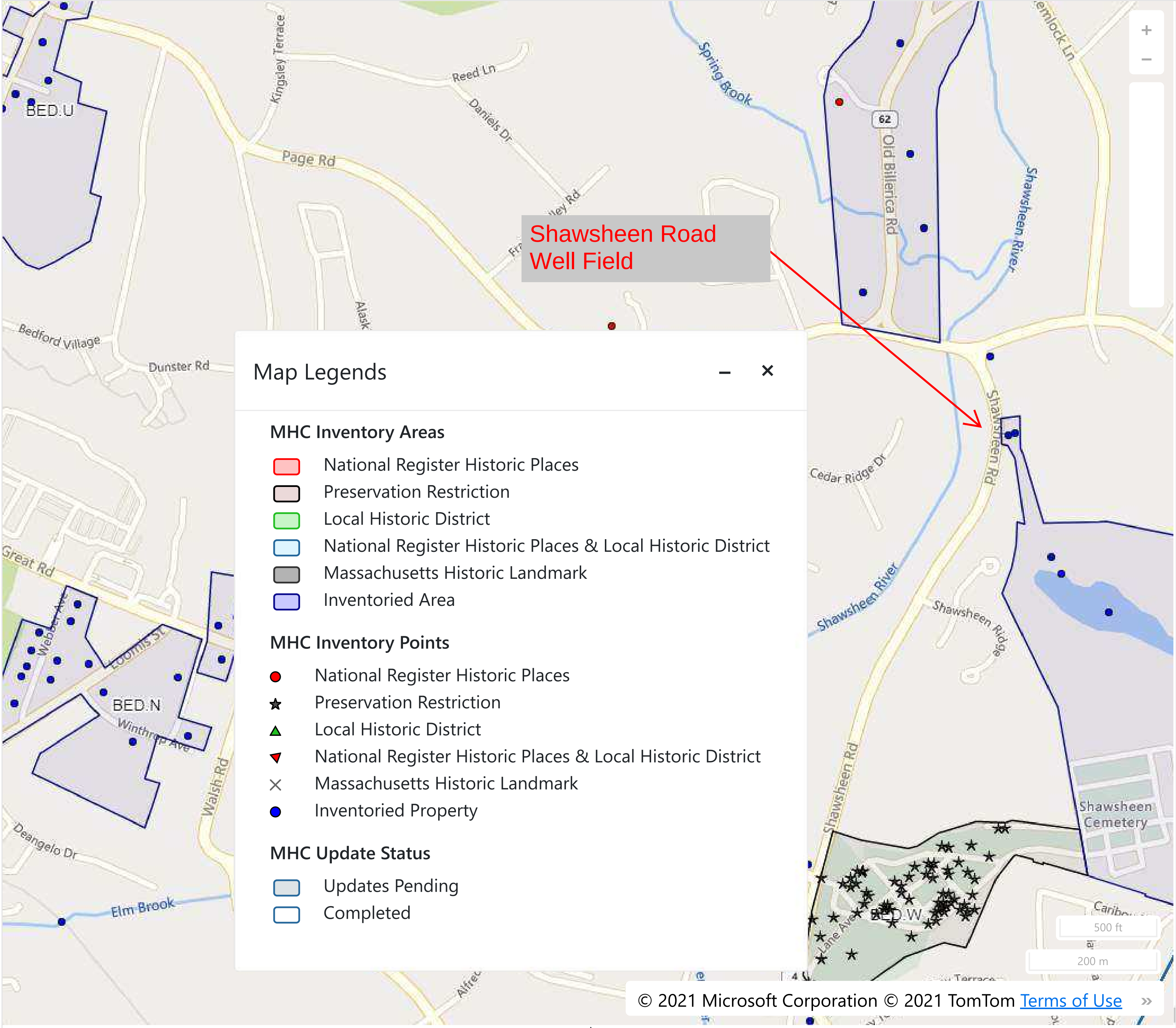
National Historic Preservation Act Review

National Register of Historic Places

National Park Service
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. Last minor update, September 2020.




Shawsheen Road
Well Field
Map Legends
MHC Inventory Areas
National Register Historic Places
Preservation Restriction
Local Historic District
National Register Historic Places & Local Historic District
Massachusetts Historic Landmark
Inventoried Area
MHC Inventory Points
National Register Historic Places
Preservation Restriction
Local Historic District
National Register Historic Places & Local Historic District
Massachusetts Historic Landmark
Inventoried Property
MHC Update Status
Updates Pending
Completed
BED.U
BED.N
BED.W
Page Rd
Reed Ln
Daniels Dr
Kingsley Terrace
Spring Brook
Old Billerica Rd
62
Shawsheen River
Shawsheen Rd
Bedford Village
Dunster Rd
Great Rd
Loomis St
Weber Ave
Winthrop Ave
Walsh Rd
Deangelo Dr
Elm Brook
Cedar Ridge Dr
Shawsheen Ridge
Shawsheen Cemetery
Lane Ave
500 ft
200 m
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Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Bedford; Street Name: Shawsheen Rd; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
BED.801	Shawsheen Cemetery	Shawsheen Rd	Bedford	1849
BED.802	Shawsheen Cemetery - Williams, Joseph Section	Shawsheen Rd	Bedford	1952
BED.932	Shawsheen Cemetery - Sikes, Oren Obelisk	Shawsheen Rd	Bedford	c 1852
BED.933	Shawsheen Cemetery Border Wall	Shawsheen Rd	Bedford	c 1849
BED.934	Shawsheen Cemetery Entry Gate	Shawsheen Rd	Bedford	c 1849
BED.935	Shawsheen Cemetery - Memorial Gates	Shawsheen Rd	Bedford	1906
BED.936	Shawsheen Cemetery Entry Drive - Memorial Drive	Shawsheen Rd	Bedford	1906
BED.937	Shawsheen Cemetery Pine Grove	Shawsheen Rd	Bedford	c 1870
BED.938	Shawsheen Cemetery Road Network	Shawsheen Rd	Bedford	c 1849
BED.939	Shawsheen Cemetery - Flagpole Area	Shawsheen Rd	Bedford	c 1849
BED.940	Shawsheen Cemetery - Concrete Rusticated Bench	Shawsheen Rd	Bedford	c 1920
BED.941	Shawsheen Cemetery - Receiving Tomb	Shawsheen Rd	Bedford	c 1860
BED.942	Shawsheen Cemetery - Lane Family Plot	Shawsheen Rd	Bedford	c 1867
BED.943	Shawsheen Cemetery - Lane, Samuel N. Family Plot	Shawsheen Rd	Bedford	c 1856
BED.944	Shawsheen Cemetery - Hartwell, Amos Family Plot	Shawsheen Rd	Bedford	c 1870
BED.945	Shawsheen Cemetery - Stearns, Elbridge Family Plot	Shawsheen Rd	Bedford	c 1876
BED.946	Shawsheen Cemetery - Citizens' Graves	Shawsheen Rd	Bedford	c 1898
BED.947	Shawsheen Cemetery - Infants' Graves	Shawsheen Rd	Bedford	c 1937
BED.948	Shawsheen Cemetery - Cutler, Amos B. Monument	Shawsheen Rd	Bedford	c 1893
BED.949	Shawsheen Cemetery - Lane, Jonathan A. Monument	Shawsheen Rd	Bedford	c 1890
BED.950	Shawsheen Cemetery - Lane, Jonathan Monument	Shawsheen Rd	Bedford	c 1860

Inv. No.	Property Name	Street	Town	Year
BED.951	Shawsheen Cemetery - Civil War Monument	Shawsheen Rd	Bedford	1874
BED.952	Shawsheen Cemetery - Phelps, Lorenzo Monument	Shawsheen Rd	Bedford	c 1901
BED.953	Shawsheen Cemetery - Bacon, Jerome A. Monument	Shawsheen Rd	Bedford	c 1904
BED.954	Shawsheen Cemetery - Bacon, Reuben Obelisk	Shawsheen Rd	Bedford	c 1857
BED.955	Shawsheen Cemetery - Munroe, Jonathan Monument	Shawsheen Rd	Bedford	c 1865
BED.956	Shawsheen Cemetery - Crosby, Dea. Michael Monument	Shawsheen Rd	Bedford	c 1920
BED.957	Shawsheen Cemetery - Butler, Samuel Box Tomb	Shawsheen Rd	Bedford	c 1880
BED.958	Shawsheen Cemetery - Hartwell, Joseph Tablet	Shawsheen Rd	Bedford	c 1865
BED.959	Shawsheen Cemetery - Hartwell, Hannah Tablet	Shawsheen Rd	Bedford	c 1888
BED.960	Shawsheen Cemetery - Hartwell, Nancy Tablet	Shawsheen Rd	Bedford	c 1834
BED.961	Shawsheen Cemetery - Hartwell, Benjamin Tablet	Shawsheen Rd	Bedford	c 1848
BED.962	Shawsheen Cemetery - Hartwell, Addia Maria Tablet	Shawsheen Rd	Bedford	c 1838
BED.963	Shawsheen Cemetery - Bacon, William E. Monument	Shawsheen Rd	Bedford	c 1906
BED.964	Shawsheen Cemetery - Allen, Nathan Cross	Shawsheen Rd	Bedford	c 1913
BED.965	Shawsheen Cemetery - Proctor, A. Warren Monument	Shawsheen Rd	Bedford	c 1893
BED.966	Shawsheen Cemetery - Porter, J. Wellington Marker	Shawsheen Rd	Bedford	c 1893
BED.967	Shawsheen Cemetery - Webber, Wallace G. Boulder	Shawsheen Rd	Bedford	c 1880
BED.968	Shawsheen Cemetery - Frost, John Hodgeman Marker	Shawsheen Rd	Bedford	c 1889
BED.969	Shawsheen Cemetery - Fitch, Nathan Monument	Shawsheen Rd	Bedford	c 1906
BED.970	Shawsheen Cemetery - Hayden, William R. Box Tomb	Shawsheen Rd	Bedford	c 1903
BED.971	Shawsheen Cemetery - MacKay, Annie C. Box Tomb	Shawsheen Rd	Bedford	c 1921
BED.972	Shawsheen Cemetery - Stearns, Rev. Samuel Tablet	Shawsheen Rd	Bedford	c 1834
BED.973	Shawsheen Cemetery - Peter Memorial Tablet	Shawsheen Rd	Bedford	
BED.974	Shawsheen Cemetery - Kenrick, Alexander W. Marker	Shawsheen Rd	Bedford	c 1897
BED.975	Shawsheen Cemetery - Butterfield, John Tablet	Shawsheen Rd	Bedford	c 1901
BED.976	Shawsheen Cemetery - Parker, Frederick Monument	Shawsheen Rd	Bedford	c 1948

Inv. No.	Property Name	Street	Town	Year
BED.977	Shawsheen Cemetery - Bacon, Jonathan Monument	Shawsheen Rd	Bedford	c 1856
BED.978	Shawsheen Cemetery - Corey, Charles C. Monument	Shawsheen Rd	Bedford	c 1893
BED.979	Shawsheen Cemetery - Comley, John Monument	Shawsheen Rd	Bedford	c 1931
BED.980	Shawsheen Cemetery - Comley, Ethel Maude Monument	Shawsheen Rd	Bedford	c 1950
BED.981	Shawsheen Cemetery - Merriam, John Monument	Shawsheen Rd	Bedford	c 1853
BED.982	Shawsheen Cemetery - Brown, Abram English Boulder	Shawsheen Rd	Bedford	c 1909
BED.983	Shawsheen Cemetery - Williams, Joseph Boulder	Shawsheen Rd	Bedford	c 1950
BED.984	Shawsheen Cemetery - Gregg, William F. Monument	Shawsheen Rd	Bedford	c 1864
BED.985	Shawsheen Cemetery - Butler, Albert L. Monument	Shawsheen Rd	Bedford	c 1862
BED.986	Shawsheen Cemetery - Goodwin, Charles L. Tablet	Shawsheen Rd	Bedford	c 1862
BED.987	Shawsheen Cemetery - Abbott, Benjamin Monument	Shawsheen Rd	Bedford	c 1843
BED.988	Shawsheen Cemetery - Gleason, Sophrina B. Boulder	Shawsheen Rd	Bedford	c 1827
BED.989	Shawsheen Cemetery - Gleason, Lucy Butler Boulder	Shawsheen Rd	Bedford	c 1846
BED.990	Shawsheen Cemetery - Gleason, Susan Davis Boulder	Shawsheen Rd	Bedford	c 1869
BED.991	Shawsheen Cemetery - Gleason, Lewis Boulder	Shawsheen Rd	Bedford	c 1895
BED.992	Shawsheen Cemetery - Cotting, James Marker	Shawsheen Rd	Bedford	c 1841
BED.993	Shawsheen Cemetery - Putnam, Samuel H. Monument	Shawsheen Rd	Bedford	c 1827
BED.994	Shawsheen Cemetery - Locke, Esther Marker	Shawsheen Rd	Bedford	c 1848
BED.995	Shawsheen Cemetery - Ashby, William Monument	Shawsheen Rd	Bedford	c 1872
BED.193		22 Shawsheen Rd	Bedford	r 1875
BED.551	Bedford Water Works Pump House #1	131 Shawsheen Rd	Bedford	1908
BED.552	Bedford Water Works Pump House #2	131 Shawsheen Rd	Bedford	1962
BED.9052	Bedford Water Works Reservoir	131 Shawsheen Rd	Bedford	1908
BED.9053	Bedford Water Works Dam and Footbridge	131 Shawsheen Rd	Bedford	2013
BED.9054	Bedford Water Works Ring Well	131 Shawsheen Rd	Bedford	1908
BED.19	Shawsheen House - Danforth Inn	137 Shawsheen Rd	Bedford	r 1725