Site Study Pepperell: Reedy Meadow off Lowell Road

About this site: At this location, Reedy Meadow Brook (1) runs through a culvert under Lowell Road/Rt. 113 (2). Reedy Meadow Brook is a coldwater fishery, with forested swamp area that helps to maintain the water quality and temperature in the brook.

Community concerns about Reedy Meadow off Lowell Road

Ready Meadow Brook floods Lowell Road. There was a blow out here a few months ago and a gas main was exposed.

The brook is a cold-water fishery.

Meeting attendees commented that there are lots of invasive plants along the road.

Nature-based Solutions Recommended for Pepperell: Reedy Meadow off Lowell Road

Reedy Meadow off Lowell Rd

Recommended NbS
NbS #s correspond to Project Templates referenced on pages 3, 6, & 7 of Site Study

1. Ready Meadow Brook Culverts under Lowell Rd. and Leighton St.
   - B F #15 MSCS culvert improvement
   - B #20 Species crossing protections
2. Ready Meadow Brook
   - DL F #5 New wetland or floodplain construction/expansion
   - DL B #58 Invasive species management
   - F #7 Stream flow alteration
   - F #13 Upstream BMPs rain-garden, bio-swale, etc.
3. Ready Meadow Pond
   - F #21 Beaver deceiver/promoter

DataViewer link:
https://arcg.is/zm4bW0

Map Key

Bright blue overlay is the FEMA 100 year floodplain

Pink overlay is FEMA 500 year floodplain

Recommended NbS Key

- F Flooding NbS
- D Drought NbS
- RT Rising temps NbS
- DW Degraded water NbS
- DL Degraded landscape NbS
- B Loss of biodiversity NbS

NbS Narrative/NbS Project Templates for Pepperell: Reedy Meadow off Lowell Road

NbS Recommendations

- In this location there is an undersized culvert that is causing flooding on the roadway.
- There is an influx of invasive species which must be removed.
- Verification is needed regarding the success of the installed beaver deceivers. In the pond itself, another beaver deceiver may be needed.
- In the area of Reedy Meadow Brook, culverts under Lowell Road and Leighton Street need improvements to facilitate species protection and stream crossing.
- In the brook itself, there is a need for more wetlands and floodplain area, stream flow alteration, and upstream best management practices like bioswales and rain gardens.

NbS Project Templates for Site Specific NbS Recommendations on previous page

Resource 1 - How to Use Templates

Resource 2 - Next Steps in Planning & Permitting

The following template numbers correspond to the NbS recommendations on the page 2 Map.

#5 Wetland or Floodplain Construction- Expansion

#7 Streamflow Alterations

#13 Upstream BMPs, Raingardens and Bioswales

#15 MSCS Culvert Improvements

#20 Species Crossing Protections

#21 Beaver Deceiver/Promoter

#58 Invasive Species Management

View Pepperell Map Atlas **for maps on land covers, soil function and storage, water resources, ecological priority sites, and more.**

Soils Information for Pepperell: Reedy Meadow off Lowell Road

Pepperell

With a position low in the watershed, Pepperell's farmland and suburban residential lands have major potential for better management for increased soil function that would mitigate stormwater issues and benefit the several towns downstream.

Of the five focus communities, Pepperell is "lowest" in the watershed and receives stormwater impact from a vast upland land area. The Nashua River runs along the town's southeastern border and then through the center of town before continuing north. The rich alluvial soils of this riverside community are home to significant acreage of farmland with interspersed residential neighborhoods that constitute a large portion of Pepperell's "degraded soils with high regeneration potential". Compared with other focus communities like Fitchburg and Leominster, Pepperell has a low amount of "highly degraded" soil that would need intensive intervention to replicate lost soil function. The town's acreage of High Functioning soil is below the watershed-wide average, but is still significant and protection of these lands is important for watershed health. These high-functioning soils are evenly mixed with "moderate-low function" soil throughout the town.

Sites Considered for Nature-based Solutions

At least two of the sites being considered for stormwater mitigation are on soils with "high regeneration potential" and these sites could be priorities for implementing and tracking the performance of soil-regeneration measures. The Unkety Brook site has been identified as prone to flooding but is within a subbasin that is mostly in neighboring Dunstable.

Priority Actions for Protecting/Enhancing Soil Health in Pepperell

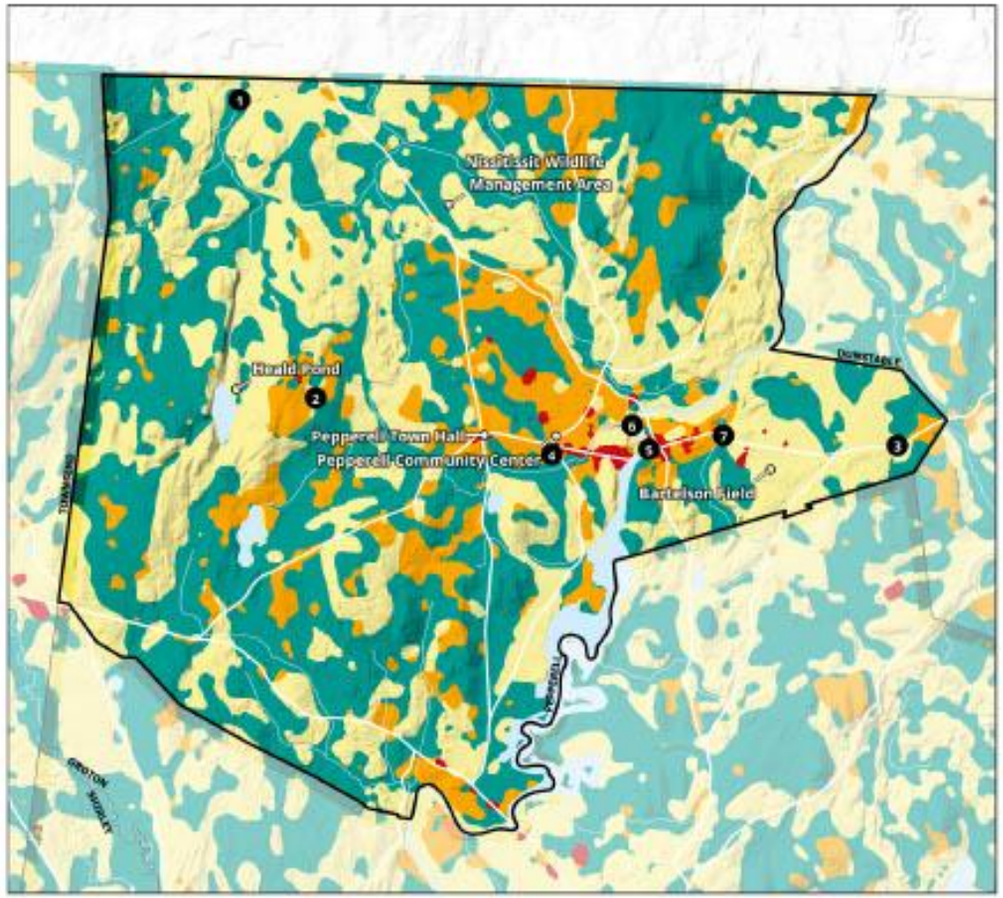
Better management of turf, lawns, gardens, and farms.

Example Nature-based Solutions:

- Education and outreach to key landowners and farmers about smart soil practices
- Pocket forests to transform biodiversity
- Planting and earthworks to restore connectivity and hydrology
- Front yard pollinator meadows
- Dual use solar
- Planning and zoning to preserve and enhance ecosystem function

#	SITE	PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE			
		Highly Degraded	High Regeneration Potential	Moderate-Low Function	High Function
1	Bemis Wellhead Protection Zone/Gulf Brook		◆	◆	◆
2	Heald Orchard/Heald Pond		◆		◆
3	Unkety Brook		◆	◆	◆
4	Fitzpatrick School Parking	◆	◆		
5	Railroad Square	◆	◆		
6	Mill Street/Varnum Brook			◆	
7	Reedy Meadow off Lowell Rd.		◆	◆	◆

Soil Functions for Resilience



	Pepperell
High Performance Soils & High Carbon Soils	6,811 ac (45.9%)
Average Function Soils	6,039 ac (40.7%)
Degraded Soils with High Regeneration Potential	1,893 ac (12.8%)
Highly Degraded Soils	101 ac (0.7%)

○ Landmarks

❶ Sites Considered for Nature-based Solutions

[Read full Nashua River Watershed-wide Healthy Soils Report](#) (PDF 25MB)

Nature-based Solutions Opportunity Table Pepperell: Reedy Meadow off Lowell Road

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Commercial/Private Property		

Best Value = An improvement to a resource that provides significant lasting resiliency and strengthens or serves related resources

Better Value = Makes significant improvements to resiliency with long lasting effect

Good Value= Improves the habitat value, or resiliency of a site or feature

Feasibility is based on property ownership or technical access

NbS Template#	Nature-based Solution Description	Reedy Meadow off Lowell Road
	Natural Environment Restructuring	
1	River / pond bank revegetation	**mid**
2	Grassland meadow management restoration	
3	Forest / shrubland heath management or restoration	
4	Wetland management restoration	
5	New wetland or floodplain construction / expansion	**low**
7	Stream flow alteration	**low**
8	Pollinator hedgerow buffer	
10	Soil management or restoration	**low***
	** see Healthy Soils Report	

NbS Templat #	Nature-based Solution Description	Reedy Meadow off Lowell Road
	Built Environment Restructuring	
11	Stormwater treatment wetlands	
12	Daylighting of streams	
13	Upstream BMPs rain-garden, bio-swale, etc.	**mid**
14	Shade-habitat/ Infiltration tree plantings	
15	MSCS culvert improvement	**mid**
17	Pervious parking walking areas	
19	Lighting modifications / upgrades	
20	Species crossing protections	**mid**
21	Beaver deceiver / promoter	**high**
22	High-performance soil specifications	**low***
23	PV Parking Awnings + Rooftops	

Nature-based Solutions Opportunity Table Pepperell: Reedy Meadow off Lowell Road, cont'd.

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Commercial/Private Property		

Best Value = An improvement to a resource that provides significant lasting resiliency and strengthens or serves related resources

Better Value = Makes significant improvements to resiliency with long lasting effect

Good Value= Improves the habitat value, or resiliency of a site or feature

Feasibility is based on property ownership or technical access

NbS #Template	Nature-based Solution Description	Reedy Meadow off Lowell Road
	Ecological Awareness & Access Projects	
24	Outdoor classroom/ Nature-play	
25	Food production and forage	
26	Apply Indigenous knowledge	
27	Soft trail	
28	Paved pervious trail UANT	
29	Soil protection-puncheon-boardwalk	
30	Pedestrian safety and bike access	**mid**
	Architectural Projects to Consider	
49	Nature-based recreational opportunities	

NbS Template#	Nature-based Solution Description	Reedy Meadow off Lowell Road
	Value Added Features on Projects	
50	Analysis and study projects	
52	Educational Interpretation	
53	Furnishings / gathering space	
55	Advocacy group/ Stewards	
56	Volunteer opportunities	
58	Invasive species management	**mid**
59	Species monitoring protocol	
60	Habitat enhancements	

MVP site visit to Reedy Meadow Brook off Lowell Road in Pepperell.

Photos by Sherry Anders

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To view the interactive online Plan, please visit nashuariverwatershed.org/Climate Resilience