Site Study Ashburnham: High Street/Cushing Street

About this site: The old town reservoir (1) is supported by concrete and fieldstone walls but the dam wall was breached during the hurricane of 1938 causing it to leak from the base. The water here is a tributary to Phillips Brook.

Community Concerns at High Street/Cushing Street Site

Heavy rains tend to send a dangerous deluge of water, rock, soil, and sand down Cushing Street (2) and High Street (3), towards Main Street (4). This event occurred 3 to 4 times in 2023. Stormwater runoff filled a whole (new) detention pond in one summer. The root issue is drainage on Cushing and High Streets. The town has already restructured one culvert that collapsed here.

Nature-based Solutions Recommended for Ashburnham: High Street/Cushing Street

High Street/Cushing Street

DataViewer link: https://arcg.is/0Oym8H

Recommended NbS

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

1. Potential Vernal Pool (PVP)
   - F D #4 Wetland management restoration
   - DL #58 Invasive species management
2. Intermittent Stream Flowing into/ out of the PVP
   - F #7 Stream flow alteration
   - F D #5 New wetland or floodplain construction/expansion
3. Edge of High Street
   - DW #11 Stormwater Treatment Wetlands
4. Intermittent Stream Outflow
   - F #16 Dam modification/controls

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 Ashburnham: High Street/Cushing Street

NbS Recommendations

- The former reservoir at this site offers the possibility of a series of tiered pools to reduce downstream stormwater impacts.
- Dam removal via hydraulic fracturing or heavy equipment is recommended.
- The culvert at High Street, southwest of the pond, could present options for retention areas. This area tends to remain very wet and was probably once an extensive wetland area.
- The soils around High and Cushing Streets are highly degraded; the interventions described in the Nashua River Watershed-wide Healthy Soils Report would restore soil health.
- Invasive plant species removal is needed; these should be replaced with native varieties.

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.

#4 Wetland Management Restoration

#5 Wetland or Floodplain Construction- Expansion

#7 Streamflow Alterations

#11 Stormwater Treatment Wetlands

#16 Dam Modifications and Controls

#58 Invasive Species Management

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

Soils Information for Ashburnham: High Street/Cushing Street

Ashburnham

Large amounts of high functioning soil and its position high in the watershed highlight the importance of protecting soil health in Ashburnham.

Ashburnham stands out among the five focus communities as having a particularly large acreage of high functioning soils that are storing over 2 million metric tons of soil organic carbon (SOC). The richest deposits of SOC are found in the wetland systems that extend from the town's major lakes. The 21,170 acres of "high function/high carbon" soils represent 80% of the town's land area and is about 3 times as much area of high functioning soil as the average in the other 4 towns. Ashburnham straddles two major watersheds with the lands to the southeast of town ultimately draining to the Nashua River, and this position highlights the town's importance in protecting and managing soil health to prevent unwanted downstream effects like flooding and poor water quality. Compared to the other four focus communities, the town has limited areas of degraded soils with potential for regeneration (just 5.7% of the land area is classified as having high regeneration potential because of the relatively little soil disturbance in Ashburnham).

Sites Considered for Nature-based Solutions

Despite having such large area of high functioning soil, several sites that see seasonal flooding have been identified in this project. The sites selected for potential Nature-based Solutions are largely nearby water bodies or streams in areas where soil function has been degraded. Efforts to increase soil capacity to store or slow stormwater flow in these locations may have a positive impact and be important demonstration sites. These site specific interventions should be complemented by efforts to conserve and protect important healthy soil resources throughout the town's forested uplands and the wetlands extending from the town's large water bodies.

Priority Actions for Protecting/Enhancing Soil Health in Ashburnham

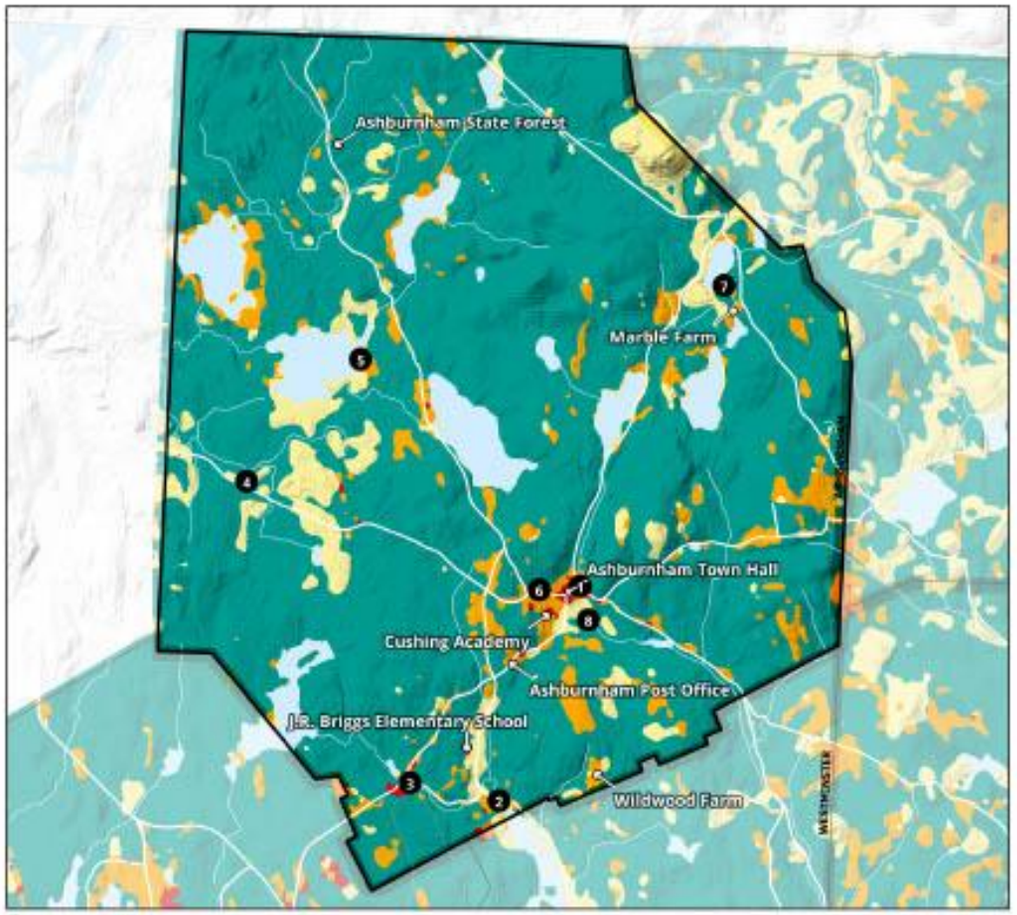
Increased protection and climate forward management of wetlands and forests.

Example Nature-based Solutions:

- Land acquisition and conservation easements
- Forested upland protection district (see Deerfield example, appendix 1)
- Transfer of development from rural to infill locations, including across town borders (See Deerfield example, appendix 1)
- Forest tree planting to increase climate-adapted species abundance and total stock and to preserve forest structure
- Improving local bylaws for wetland protections

#	SITE	PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE			
		Highly Degraded	High Regeneration Potential	Moderate-Low Function	High Function
1	Phillips Brook/Residential Area on Main St.	◆	◆		◆
2	Pump Station			◆	
3	Sweeney Park	◆	◆		
4	Dump/Transfer Station			◆	
5	Page Ave		◆		
6	High St./Cushing St.	◆	◆		
7	S. Branch Souhegan River		◆		◆
8	Brickford Field			◆	◆

Soil Functions for Resilience



	ASHBURNHAM
High Performance Soils & High Carbon Soils	21,170 ac (80.8%)
Moderate-Low Function Soils	3,450 ac (13.2%)
Degraded Soils with High Regeneration Potential	1,507 ac (5.7%)
Highly Degraded Soils	83 ac (0.3%)

○ Landmarks

❶ Sites Considered for Nature-based Solutions

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

Nature-based Solutions Opportunity Table Ashburnham: High Street/Cushing Street

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Municipal		

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	High Street/Cushing Street
	Natural Environment Restructuring	
1	River / pond bank revegetation	
2	Grassland meadow management restoration	
4	Wetland management restoration	**mid**
5	New wetland or floodplain construction / expansion	**mid**
7	Stream flow alteration	**mid**
8	Pollinator hedgerow buffer	
10	Soil management or restoration**	**mid**

** see Healthy Soils Report

NbS Template #	Nature-based Solution Description	High Street/Cushing Street
	Built Environment Restructuring	
11	Stormwater treatment wetlands	
13	Upstream BMPs rain-garden, bio-swale	
14	Shade-habitat/ Infiltration tree plantings	
15	MSCS culvert improvement	**mid**
16	Dam modification / controls	**mid**
17	Pervious/ hi-SRI parking/walking areas	
19	Lighting modifications / upgrades	
20	Species crossing protections	**mid**
21	Beaver deceiver / promoter	
22	High-performance soil specifications**	
23	PV Parking Awnings + Rooftops	

Nature-based Solutions Opportunity Table Ashburnham: High Street/Cushing Street, cont'd.

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Municipal		

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	High Street/Cushing Street
	Ecological Awareness & Access Projects	
24	Outdoor classroom/ Nature-play	
25	Food production and forage	
26	Apply Indigenous knowledge	
27	Soft trail	
30	Pedestrian safety and bike access	
	Architectural Projects to Consider	
49	Nature-based recreational opportunities	

NbS Template #	Nature-based Solution Description	High Street/Cushing Street
	Value Added Features on Projects	
50	Analysis and study projects	
52	Educational Interpretation	
53	Furnishings / gathering space	
56	Volunteer opportunities	
58	Invasive species management	**high**
60	Habitat enhancements	

High Street- Cushing Street site

Photo by Sara Singh

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