Site Study Leominster: Mall at Whitney Field Area

About this site: This 75 acre shopping mall area features a central shopping mall (1), strip malls (2), and extensive impervious parking area (3). Monoosnoc Brook (4) runs the length of the western boundary, and the North Nashua River (5) runs the length of the eastern boundary. The site is adjacent to Rt.2 (6) to the NE and Rt. 190 to the SE. It is important to note that Whitney Field Mall is one of the largest flood zone areas in all of Leominster (and North Nashua Basin) as illustrated on page 2. The site is almost entirely impervious surface. The drainage issues are very severe; flash rains flood the actively used parking lot.

Community concerns about the Mall at Whitney Field site:

Attendees at the community meetings were concerned about flooding in the mall area, roads, and parking lots. The vast paved surface area creates conditions conducive to flooding.

There are concerns for stormwater runoff into nearby Monoosnoc Brook and the North Nashua River which degrades water quality with pollutants and sediment, in turn negatively impacting wildlife habitat with loss of biodiversity.

The very extensive parking areas also create a heat island effect. Thoughts are that there is far more parking than is needed.

As tenancy at the mall has fallen, there are many empty storefronts. Attendees pondered repurposing some properties to affordable housing.

Existing paths and greenway along Monoosnoc Brook offer potential for public recreational space but are degraded by poor maintenance, lack of vegetation, and trash blown in or discarded from the mall area.

Nature-based Solutions Recommended for Leominster: Mall at Whitney Field Area

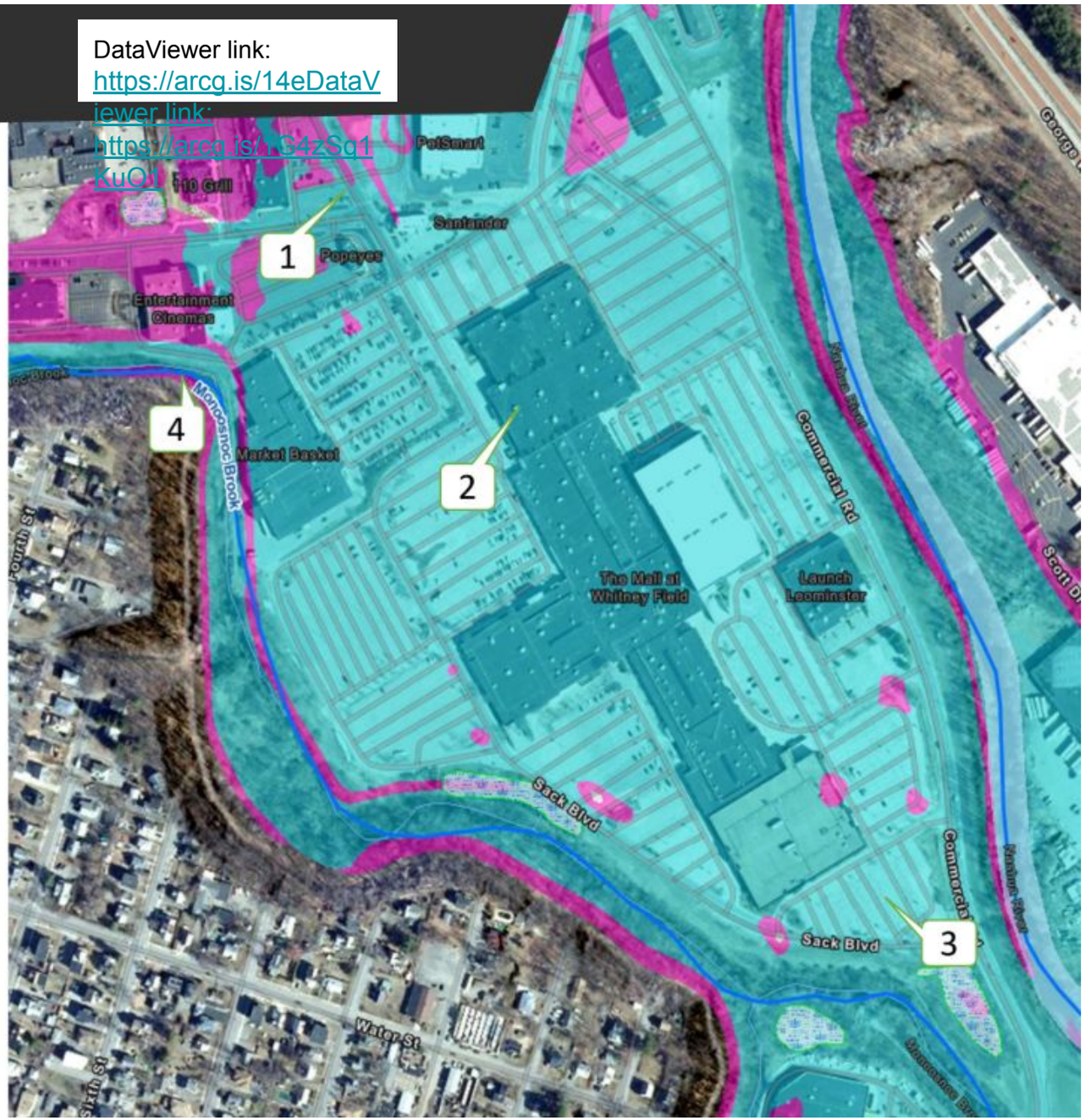
Mall Area

DataViewer link: https://arcg.is/14eDataViewer link: https://arcg.is/1C4zSq1KuO1

Recommended NbS

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

1. Parking within Upper Mall
   - DW D F #17 Pervious parking and walking areas
2. The Mall at Whitney Field
   - RT #23 PV parking awnings and rooftops
3. Lower Mall Parking
   - B #8 Pollinator Hedgerow Buffer
   - RT B #9 Pocket forest
   - • #53 Furnishing/gathering space
4. Monoosnoc Brook
   - DL B #58 Invasive species management
   - B #60 Habitat enhancements
   - DW DL #1 River/pond bank revegetation
   - D F #5 New wetland or floodplain construction/expansion



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 Leominster: Mall at Whitney Field Area

NbS Recommendations

- Within the parking area, pervious parking and walking areas are needed. Removing unnecessary parking areas and creating aesthetically pleasing park areas and playgrounds would invite more people to visit the area.
- Removing some pavement and increasing the meandering of Monoosnoc Brook to reduce the velocity of water downstream.
- A variety of green infrastructure types could be deployed to break up paved surfaces and increase shade.
- Adding photovoltaic elements to the parking awnings and rooftops is recommended.
- The parking area would benefit from a pollinator hedgerow buffer, pocket forests, and furnishings that contribute towards the creation of a gathering space.
- Verification is needed as to the effectiveness of the water retention ponds and wetlands here. The current retention ponds need to be cleared out.
- Increasing floodplain storage through wetland/floodplain expansion, revegetation along the banks, and habitat enhancements should be key priorities here.
- There is significant sedimentation and trash on the walking trail that runs along Monoosnoc Brook which needs to be cleaned up. Invasive species removal is needed along the brook.
- There is an opportunity for habitat connections to Monoosnoc Brook. Fish are returning to the lower end of Monoosnoc Brook, and wetlands are hosting minnows that feed herons. Contact with the owners of the mall could secure permission to do maintenance work on the mall side of the stream.
- Abandoned businesses and buildings have abundant space and could be converted into affordable housing.

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.

#1 River/Pond Bank Revegetation

#5 Wetland or Floodplain Construction- Expansion

#8 Pollinator Hedgerow Buffer

#9 Pocket Forest

#17 Pervious Parking- Walking Areas

#23 PV Parking- Parking Awnings

#53 Furnishings

#58 Invasive Species Management

#60 Habitat Enhancements

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

Soils Information for Leominster: Mall at Whitney Field Area

Leominster

Leominster's soils of high regeneration potential form a belt around the downtown area and are more clustered together than neighboring Fitchburg's. Regeneration or replication of the degraded soil function can mitigate negative impacts to Leominster's downtown and to the communities downstream.

Leominster, like neighboring Fitchburg, contains significant areas of developed and impervious landscapes compared with other communities in the Nashua River Watershed. Much of the most developed and degraded landscapes are found along the North Nashua River that flows in from northern neighbor Fitchburg. Pockets of "Highly Degraded" soils that have the potential for restored function with intensive intervention strategies are found throughout this central corridor along the river. Of the five focus communities, Leominster contains the most acreage of "degraded soil with high regeneration potential" primarily found in the suburban belt that surrounds the more urbanized downtown. The forested upland western side of city is home to the highest functioning soils in Leominster.

Sites Considered for Nature-based Solutions

Several sites in downtown Leominster near the North Nashua river have been identified as flood prone. Efforts to improve soil function in the suburban belt that surrounds the downtown can slow stormwater flows mitigate flooding. Potential sites for this kind of Nature-based Solution are Smith St. and Pierce Pond. Educational projects could be implemented there to encourage better soil management practices on the lawns and gardens of these suburban yards. Notably, there are several sites flagged for potential stormwater catchment projects that are in the same subbasin of the identified flood sites in Ashburnham and upstream of those sites. Sites in the forested uplands should be conserved/reinforced.

Priority Actions for Protecting/Enhancing Soil Health in Leominster

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

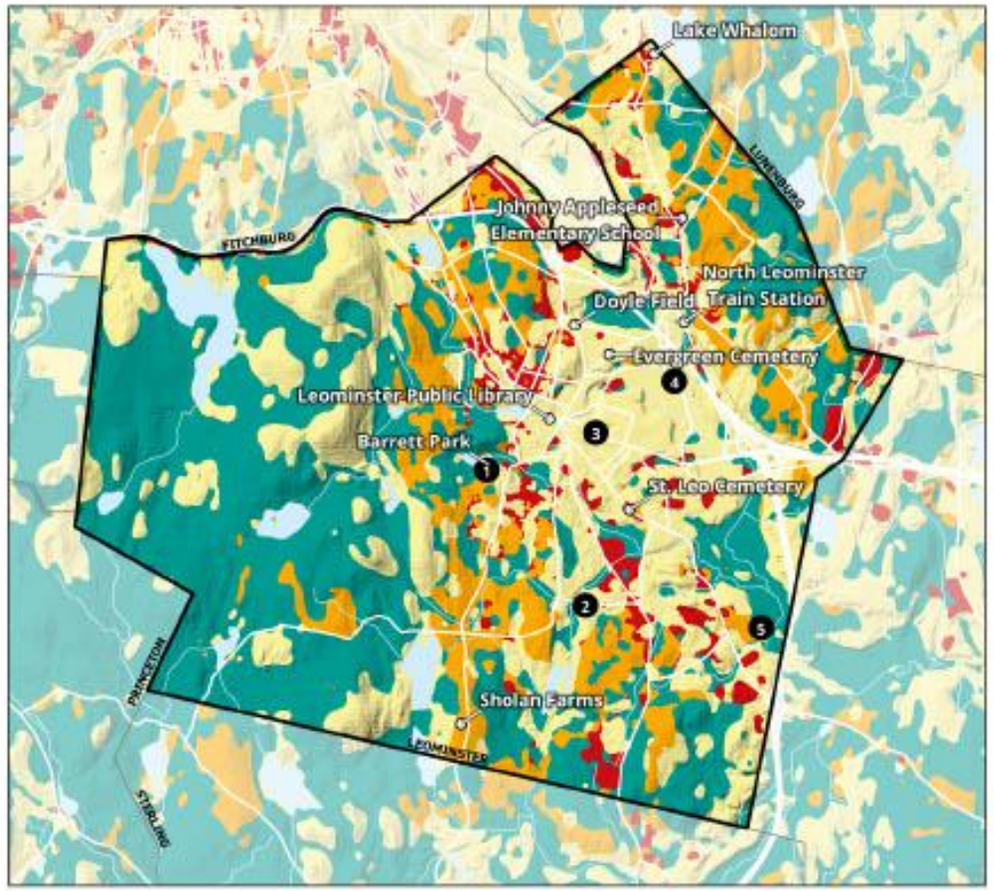
Regenerate or replicate lost soil function in highly degraded urbanized landscapes.

Example Nature-based Solutions:

- Green infrastructure (high performance tree pits, bio-swales, rain gardens)
- Parking lot renovations

#	SITE	PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE			
		Highly Degraded	High Regeneration Potential	Moderate-Low Function	High Function
1	Barrett Park			◆	◆
2	Fournier Ballfields			◆	
3	Mechanic St.			◆	
4	Mall Area			◆	
5	Johnny Appleseed SP (DCR)		◆		◆

Soil Functions for Resilience



	Leominster
High Performance Soils & High Carbon Soils	7,821 ac (41.2%)
Average Function Soils	7,489 ac (39.4%)
Degraded Soils with High Regeneration Potential	2,628 ac (13.8%)
Highly Degraded Soils	1,055 ac (5.6%)

○ Landmarks

❶ Sites Considered for Nature-based Solutions

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

Nature-based Solutions Opportunity Table Leominster: Mall at Whitney Field Area

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Mixed Commercial/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	Mall at Whitney Field Area
	Natural Environment Restructuring	
1	River / pond bank revegetation	**mid**
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	**mid**
9	Pocket forest	**low**
10	Soil management or restoration	
	** see Healthy Soils Report	

NbS Template#	Nature-based Solution Description	Mall at Whitney Field Area
	Built Environment Restructuring	
11	Stormwater treatment wetlands	**high**
13	Upstream BMPs rain-garden, bio-swale	
14	Shade-habitat/ Infiltration tree plantings	**low**
16	Dam modification / controls	
17	Pervious/ hi-SRI parking/walking areas	**low**
18	Aquatic algae / invasive treatment	
19	Lighting modifications / upgrades	**low**
22	High-performance soil specifications**	
23	PV Parking Awnings + Rooftops	**low**

Nature-based Solutions Opportunity Table Leominster: Mall at Whitney Field Area, cont'd.

Value	BEST	BETTER	GOOD
Feasibility	high	mid	low
Ownership	Mixed Commercial/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

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Feasibility is based on property ownership or technical access

NbS Template#	Nature-based Solution Descriptio	Mall at Whitney Field Area
24	Outdoor classroom/ Nature-play	
25	Food production and forage	
27	Soft trail	**mid**
28	Paved pervious trail	
29	Soil protection-puncheon-boardwalk	
30	Pedestrian safety and bike access	**low**
	Architectural Projects to Consider	
49	Nature-based recreational opportunities	

NbS Template#	Nature-based Solution Description	Mall at Whitney Field Area
	Value Added Features on Projects	
52	Educational Interpretation	
53	Furnishings / gathering space	**mid**
56	Volunteer opportunities	
58	Invasive species management	**high**
59	Species monitoring protocol	
60	Habitat enhancements	**mid**

Top row, left to right:

Unvegetated land between mall parking area and Monoosnoc Brook, photo by Ralph Baker.

Monoosnoc Brook, photo by Sherry Anders.

Bottom row, left to right:

Drainage on northeast side of parking lot.

Drainage along west side of parking lot between mall and Monoosnoc Brook.

Photos by Sherry Anders.

This "Building Community Climate Resilience: Nashua River Watershed-wide Nature-based Solutions Plan" is funded by a Municipal Vulnerability Preparedness grant awarded to the City of Fitchburg by the Healey-Driscoll Administration's Municipal Vulnerability Preparedness (MVP) program, which is administered by the Executive Office of Energy and Environmental Affairs (EEA). NRWA was the lead coordinator for this project.

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