# Site Study Fitchburg: Civic Center/Falulah Brook

**About this site:** The Wallace Civic Center (1) is bordered by John Fitch Highway (2) to the west and Falulah Brook (3) to the east. North of this site is Greene's Pond, and south lies Coolidge Park (4), both of which sites were visited as part of this MVP project. The Civic Center is a 1,000 seat multi-use arena used for concerts and for an ice rink. First opened in 1970, the center was leased to Fitchburg State University in 2007, under a 99-year lease agreement. The University has undertaken extensive renovations to the facilities.

**Community concerns about Civic Center/ Falulah Brook**

Falulah Brook may be negatively impacted by road salt runoff and other roadway and parking lot contaminants, including particles from tires, items of trash and leaking automotive fluids from Wallace Civic Center parking lot, and from ice rink paint contamination from zamboni waste being dumped nearby. Contamination filtration would be beneficial here. A biotreatment swale or biotreatment chamber situated along the downslope edge of the parking lot could be helpful. As it is, stormwater runoff from the parking lot flows unabated directly into the Brook. The brook has bank erosion issues.

Very large area of impervious paving on the site increases flooding and stormwater runoff, as well as creating a heat island effect in the summer. Creation and maintenance of vegetated islands with appropriate plantings (trees, shrubs, forbs) would help alleviate the urban heat island effect.

# Nature-based Solutions Recommended for Fitchburg: Civic Center/Falulah Brook

## Civic Center/Falulah Brook

BSC Data Viewer link: https://arcg.is/0nzTSr

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

1. Edge of Parking Lot
   - DW F — #11 Stormwater treatment wetlands
   - DW D F — #13 Upstream BMPs rain-garden, bio-swale, etc.
   - • #52 Educational Interpretation
2. Falulah Brook
   - DWDL B — #1 Stream bank restoration
   - DL B — #58 Invasive species management
3. Civic Center Parking Lot
   - DW D F — #17 Pervious parking walking areas
   - RT D F — #14 Shade-habitat/ Infiltration Tree Plantings
   - RT — #23 PV parking awnings and rooftops
   - RT D — #36 Shade requirement
   - B — #19 Lighting modification/upgrades
   - DL B — #3 Forest/shrubland heath management or restoration

**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 Fitchburg: Civic Center/Falulah Brook

**NbS Recommendations**

- Runoff from the large parking lot immediately north of the Wallace Civic Center currently flows untreated directly into Falulah Brook. Install infiltration/ biotreatment swales along the back (eastern) side of the parking lot where runoff goes directly into the brook.
- There is some concern about the low density invasive plants along the brook. Some stream bank restoration could be incorporated.
- Use of pervious paving in the expansive parking lot could help infiltrate stormwater.
- Shade tree planting would help to reduce the heat island effect caused by the large paved parking area.
- Parking lot lights could be modified to reduce light pollution.
- There is an opportunity for a kiosk next to the ticket booth with information explaining the NbS here.
- Zamboni ice from the ice rinks is dumped behind the Civic Center. The low spot behind the Civic Center where it has been dumped could be another infiltration section which would filter the water from the melted waste before it enters Falulah Brook.
- The eastern side of the Civic Center is steep and could be an area for plantings and edible options rather than lawn.

**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

#3 Forest Management Restoration

#11 Stormwater Treatment Wetlands

#13 Upstream BMPs, Raingardens, and Bioswales

#14 Shade Habitat Infiltration Tree Planting

#17 Pervious Parking/Walking Areas

#19 Lighting Modifications

#23 PV Parking/Parking Awnings

**#36 Shade Requirement**

#52 Educational Interpretation

#58 Invasive Species Management

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

# Soils Information for Fitchburg: Civic Center/Falulah Brook

## Fitchburg

**Significant acreage of degraded soils and soils with high regeneration potential that are spread throughout the city mean that better management practices and efforts to replicate lost soil function are important for increasing resilience in Fitchburg.**

Fitchburg, along with neighboring Leominster, 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 through the city center. 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. The high functioning soils of Fitchburg are found primarily in the forested uplands in the northern half of the city with pockets of "high regeneration potential" soils located on the farmland and residential areas there.

### Sites Considered for Nature-based Solutions

Sites of interest for this project are located in the more degraded and low functioning soil areas and subbasins with a focus on green infrastructure to replicate soil water filtration and holding capacity. This is an important strategy; however, paying attention to the areas of high regeneration potential on the farms, lawns, and gardens of the city's upland areas and encouraging management for better soil health there should be a complementary strategy.

### Priority Actions for Protecting/Enhancing Soil Health in Fitchburg

**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

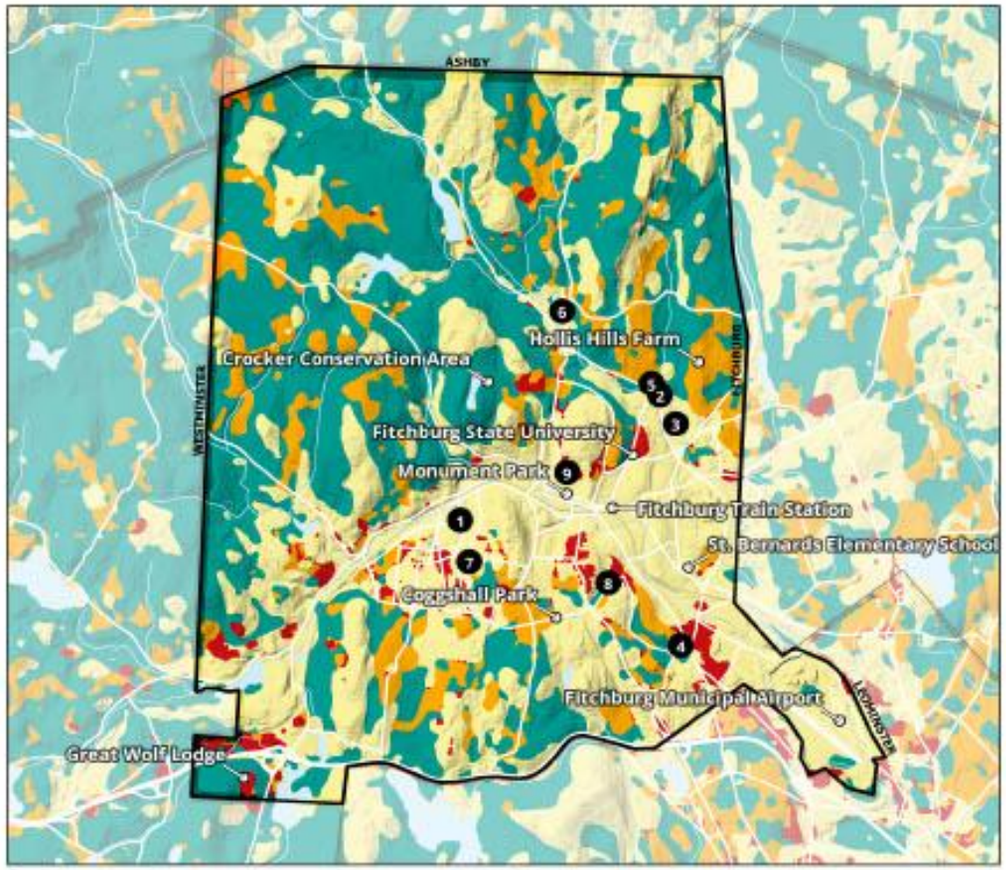
**Regenerate or replicate lost soil function in highly degraded urbanized landscapes.**

*Example Nature-based Solutions:*

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

| # | SITE | PREDOMINANT SOIL FUNCTIONS FOR RESILIENCE | | | |
|---|---|---|---|---|---|
| | | Highly Degraded | High Regeneration Potential | Moderate-Low Function | High Function |
| 1 | Cleghorn St. | | | ◆ | |
| 2 | Civic Center/Falulah Brook | | | ◆ | |
| 3 | Coolidge Park | | | ◆ | |
| 4 | Green Acres | | ◆ | | |
| 5 | Putt's Pond | | | ◆ | ◆ |
| 6 | Greene's Pond | | | ◆ | ◆ |
| 7 | Parkhill Park/Sand Brook | | | ◆ | |
| 8 | Beekman St. and Hobson St. Culverts | ◆ | | ◆ | |
| 9 | Longsjo School | | | ◆ | |

## Soil Functions for Resilience




| | Fitchburg |
|---|---|
| High Performance Soils & High Carbon Soils | 7,369 ac (41%) |
| Average Function Soils | 7,952 ac (44.2%) |
| Degraded Soils with High Regeneration Potential | 2,064 ac (11.5%) |
| Highly Degraded Soils | 609 ac (3.4%) |

○ Landmarks

❶ Sites Considered for Nature-based Solutions

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

# Nature-based Solutions Opportunity Table Fitchburg: Civic Center/Falulah Brook

| Value | BEST | BETTER | GOOD |
|---|---|---|---|
| Feasibility | high | mid | low |
| Ownership | Municipal | | |
| | ** see Healthy Soils Report | | |

**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 | Civic Center/Falulah Brook | | NbS Template # | Nature-based Solution Description | Civic Center/Falulah Brook |
|---|---|---|---|---|---|---|
| | **Natural Environment Restructuring** | | | | **Built Environment Restructuring** | |
| 1 | River / pond bank revegetation | **high** | | 11 | Stormwater treatment wetlands | **mid** |
| 2 | Grassland meadow management restoration | | | 13 | Upstream BMPs rain-garden, bio-swale | **high** |
| 3 | Forest / shrubland heath management or restoration | **mid** | | 14 | Shade-habitat/ Infiltration tree plantings | **high** |
| 3A | Cliff stabilization shrubland | | | 15 | MSCS culvert improvement | **mid** |
| 4 | Wetland management restoration | | | 16 | Dam modification / controls | |
| 5 | New wetland or floodplain construction / expansion | | | 17 | Pervious parking walking areas | **high** |
| 6 | Pond creation/ elimination / alteration | | | 18 | Aquatic algae / invasive treatment | |
| 7 | Stream flow alteration | | | 19 | Lighting modifications / upgrades | **low** |
| 8 | Pollinator hedgerow buffer | | | 20 | Species crossing protections | |
| 9 | Pocket forest | | | 22 | High-performance soil specifications | **mid*** |
| 10 | Soil management or restoration | | | 23 | PV Parking Awnings + Rooftops | **high** |

# Nature-based Solutions Opportunity Table Fitchburg: Civic Center/Falulah Brook, 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 | Civic Center/Falulah Brook |
|---|---|---|
| | **Ecological Awareness & Access Projects** | |
| 24 | Outdoor classroom/ Nature-play | **mid** |
| 25 | Food production and forage | **mid** |
| 27 | Soft trail | |
| 28 | Paved pervious trail | **mid** |
| 29 | Soil protection-puncheon-boardwalk | |
| 30 | Pedestrian safety and bike access | **mid** |
| | **Architectural Projects to Consider** | |
| 49 | Nature-based recreational opportunities | **low** |

| NbS Template# | Nature-based Solution Description | Civic Center/Falulah Brook |
|---|---|---|
| | **Value Added Features on Projects** | |
| 50 | Analysis and study projects | **high** |
| 52 | Educational interpretation | **high** |
| 53 | Furnishings / gathering space | |
| 56 | Volunteer opportunities | **high** |
| 58 | Invasive species management | **mid** |
| 59 | Species monitoring protocol | **mid** |
| 60 | Habitat enhancements | **mid** |

Falulah Brook at the Civic Center parking lot, where the pedestrian bridge to the sports fields crosses the brook. Note that stormwater runoff currently flows unabated directly into the brook at this location.

*Photo by Paulina Torres*

MVP site visit at Civic Center/ Falulah Brook

*Photo by Ralph Baker*

*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