

# Case Study: Town of Brattleboro

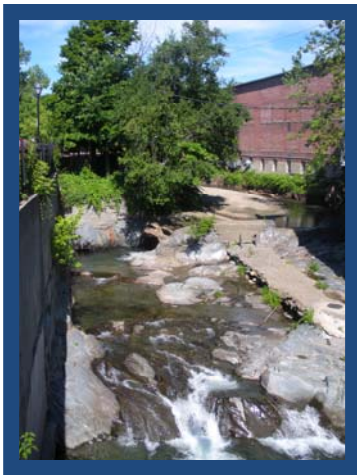
## Vermont Municipal Green Infrastructure Toolkit

Green Infrastructure (GI) means different things to different people depending on the context in which it is used. In Vermont we define it as “a wide range of multi-functional, natural and semi-natural landscape elements located within, around, and between developed areas at all spatial scales.” This includes everything from forests and meadows to wetlands, floodplains, and riparian areas. For municipalities Green Infrastructure can be promoted in two ways: by using Low Impact Development (LID) concepts at both the macro-level of town planning and site design and by promoting the use of Green Stormwater Infrastructure (GSI) practices and techniques. LID seeks to maintain a site’s pre-development ecological and hydrological function through the protection, enhancement, or mimicry of natural processes.” GSI consists of systems and practices that restore and maintain natural hydrologic processes in order to reduce the volume and water quality impacts of the built environment while providing multiple societal benefits.”

### Making the Case for GSI

In collaboration with the Vermont Agency of Natural Resources and other Regional Planning Commissions in Vermont, the Windham Regional Commission (WRC) sought to assess regulatory gaps and barriers to the adoption of green infrastructure programs and practices in two towns in the region: Brattleboro and Londonderry.

*The Whetstone Brook, which flows through Brattleboro’s historic downtown area, is highly impacted by development near and even abutting its banks. Photo credit: Cullen Meves.*



Through a weighted analysis, we identified the Town of Brattleboro as a high priority community for updating the town’s land use regulations to encourage GSI, based on the following:

- Percent impervious cover (over 16%), percent impervious cover within 300 ft of surface water (nearly 35%), and percent impervious cover within 150 feet of surface water (nearly 18%);
- Development induced impaired streams;
- Population as a percent of total county population;

- Downtown Center Designation status; and
- Potential for implementation

Concurrently with the ANR/RPC GSI project, the Town of Brattleboro was completing a comprehensive zoning and subdivision regulation overhaul through a Municipal Planning Grant (MPG). This created an ideal opportunity for the WRC to provide support to the contracted firm, Place Sense, by reviewing drafts as the document was developed to help ensure that the new zoning regulations supported LID and GSI to the maximum extent possible.

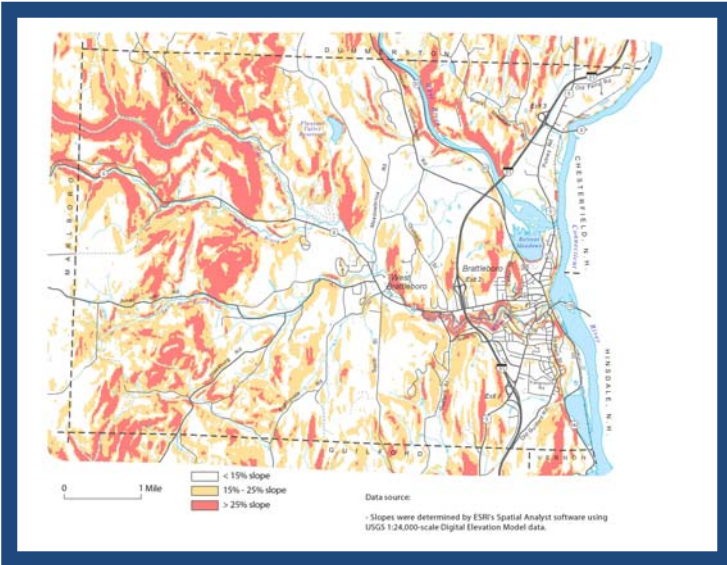
### Brattleboro and Stormwater

The town of Brattleboro is the largest and most densely developed community in southeastern Vermont with approximately 12,000 residents. The West River and Whetstone Brook enter the Connecticut River in Brattleboro’s downtown area. The Whetstone Brook is particularly vulnerable to flash flooding during large storm events, making it critically important to address stormwater runoff and land use not only in the urbanized downtown area, but also in the steep, rural areas to the west.

Complicating efforts to protect infrastructure, Brattleboro was originally settled as a mill town and consequently has significant infrastructure (including roughly 140 buildings and wastewater infrastructure), located within its river corridors, and even within the floodway itself. During Tropical Storm Irene, 17 mobile homes located along the Whetstone Brook were destroyed and many others were significantly damaged,

raising concerns of public safety and creating pressure to address development in riparian areas.

In addition, the existing stormwater infrastructure in downtown Brattleboro is significantly undersized, causing flooded streets and damaged infrastructure through erosion and inundation during large storm events. Due to the exorbitant costs of upgrading the stormwater infrastructure, there are significant economic incentives to prevent additional runoff pressure on the system and even reduce existing sources of runoff where feasible.



## New Protection Standards

In response to its complicated stormwater conditions, the Town included a policy in its 2013 Town Plan “to promote best management practices to reduce stormwater runoff and control erosion.” This policy is currently being addressed through the Town’s comprehensive land use regulation update.

The proposed land use regulations include new Resource Protection Standards to regulate new development in several sensitive areas. The regulations offer tiered maximum allowable development and clearing on steep slopes, with an

inverse relationship between slope percent and the amount of disturbed and impervious area. Erosion control requirements establish specific guidelines around disturbance during construction to minimize erosion and sedimentation. A stormwater management section requires that new construction either implements LID practices to preserve the natural hydrology or installs GSI with minimum infiltration standards for stormwater runoff. Special protections in riparian areas are designed to improve ecological function and water quality by limiting development and disturbance within 100 feet of surface waters and wetlands. The final resource protection of the proposed regulations require naturally vegetated buffers be maintained for wetlands and vernal pools.

## Next Steps

The Planning Commission will hold two public hearings during the summer of 2016, after which the Selectboard will vote whether to approve the new land use regulations. The proposed land use regulations provide greater protections for sensitive resource areas and require GSI and/or LID practices.

It will take some time before these new regulations have measurable effects on runoff and water quality in and downstream of Brattleboro; however these new regulations represent an important step toward protecting not only our natural resources, but also public and private infrastructure.

*Brattleboro’s proposed land use regulations include Stormwater Management Guidelines that require implementation of LID and/or GSI on new development.*

For more information on building Green Infrastructure in Windham County, please contact WRC:

802-257-4547 or [wrc@windhamregional.org](mailto:wrc@windhamregional.org)

or, visit <http://vpic.info/GreenInfrastructureToolkit.html>