



**Agency of Commerce and
Community Development**

Green Stormwater Infrastructure (GSI) Implementation Work Plan

2015 Update

The update of the Green Stormwater Infrastructure work plan reports on progress made in implementing the 2014 work plan by the Agency of Commerce and Community Development (ACCD) as of June 2015. Updated by the Community Planning and Revitalization Division of the Department of Housing and Community Development.

June 24, 2015.

Green Stormwater Infrastructure (GSI) Implementation Work Plan – 2015 Update

The update of the Green Stormwater Infrastructure work plan reports on progress made in implementing the 2014 work plan by the Agency of Commerce and Community Development (ACCD) as of June 2015. Updated by the Community Planning and Revitalization Division of the Department of Housing and Community Development, June 24, 2015.

Many communities across Vermont experienced flood-related damage in the wake of storms such as the Spring Floods of 2011, Tropical Storm Irene in 2011, the May 2013 floods and more recent flooding last year. Damage from these events resulted in billions of dollars of damage and took lives. Many affected communities responded to recent flood disasters with expensive, engineered solutions, elevating buildings, constructing levees, floodwalls, and armoring banks and installing larger culverts or stormwater pipes. Despite these measures, flood losses continue to grow. Climate change projections suggest the frequency and intensity of severe storms is on the rise, increasing the urgency with which communities must address flood resiliency.

Many of Vermont historic downtowns and village centers are located along rivers and in floodplains. Typically, these sites relate to a town or region's economy and contribute to the attractive character of these historic commercial centers. However, the result is a need to address stormwater and mitigate flooding through Green Stormwater Infrastructure and other flood mitigation strategies. Green Stormwater Infrastructure (GSI) relies on natural and semi-natural systems to infiltrate, treat and store water in dispersed locations throughout the landscape, and make our communities resilient. GSI helps retain and/or reuse stormwater and is often less costly and more environmentally friendly than traditional stormwater treatment.

ACCD embraces the use of GSI as an effective tool to make communities more resilient, mitigate flooding and manage stormwater. ACCD is proud of its flood resilience efforts and recognizes that GSI is an important tool to mitigate flooding and make our downtowns and villages more resilient. The following work plan addresses many of the challenges of using GSI and examines at a variety of ways to address them in the future.

a. ACCD's Long-term Vision for GSI

GSI is an integral component of resilient communities, protecting people, buildings and facilities from future flooding events, and ensuring that our villages and downtowns remain economically, socially and environmentally viable places to live.

b. Current GSI Initiatives within ACCD

Integrating Green Stormwater Infrastructure into the guidance on flood resilience and disaster recovery

ACCD encourages and promotes the use of GSI in its flood resiliency programs and projects (i.e. the EPA – SGIA project in the Mad River Valley to inform the development of statewide guidance for municipalities).

Vermont Planning Information Center (VPIC) Publication on Green Infrastructure

ACCD worked with The Department of Forests and Parks and the Vermont League of Cities and Towns to produce a topic paper for municipal officials on Green Infrastructure. The Land Use Implementation Manual introduces GSI, provides an overview of implementation strategies, and recommends funding mechanisms.

Interagency GI Council

ACCD staff attends the Interagency GI Council – a group of interagency staff representing state agencies established by ANR. The GI Council assists ANR in moving specific GSI initiatives and strategies forward, including the development of the GSI Strategic Plan. The Council will continue to provide support as the Plan moves towards implementation.

Vermont Economic Resiliency Initiative (VERI)

ACCD is working with the Agencies of Natural Resources and Transportation and the Regional Planning Commissions on the Economic Development Administration (EDA) funded VERI project to help ensure Vermont municipalities minimize rebuilding and recovery costs and businesses stay open when disaster strikes. The VERI project developed five community-tailored actions plans with specific recommendations, including incorporating GSI best practices to reduce future flood damages and disruptions to local businesses.

Downtown Transportation Grants

ACCD funds Downtown Transportation Grants to help municipalities pay for transportation-related capital improvements within or serving a designated downtown district. Recent Downtown Transportation Grants funded green infrastructure projects in St. Albans, Burlington and Poultney.

Work Group on Wastewater Treatment for Villages

A Work Group organized by ACCD with DEC staff, is working to address wastewater treatment needs of villages that lack a sewage treatment system. In most cases, decentralized wastewater treatment with in-ground disposal is the only option, so planning for wastewater needs to be coordinated with green stormwater infrastructure solutions. This is especially important for villages where soils are impervious and sites for infiltrating stormwater or wastewater are limited.

Vermont Downtown Action Team (V-DAT)

ACCD led the [Vermont Downtown Action Team](#) (V-DAT) to speed the recovery of 8 communities impacted by the floods in 2011. The V-DAT team articulated the desires of the community and prioritized design improvements, including incorporating GSI best practices that connected the downtowns with the surrounding neighborhoods and significant natural resources, most notably its rivers. The V-DAT assisted these communities in their recovery, raised awareness of GSI, and provided ways to fund future improvements to improve the resiliency and vibrancy of the community.

Resilient Vermont

ACCD is working with the Institute for Sustainable Communities (ISC) on its [Resilient Vermont Initiative](#). Resilient Vermont's aim is to weave together the many initiatives currently underway and equip the state to prepare for, respond to and bounce back from future natural disasters.

c. Existing Challenges to Widespread Utilization of GSI

In the past five years, ACCD made progress in the promotion and adoption of GSI practices. However, in order to fully integrate GSI into agency processes and programs, a number of existing challenges must be addressed.

1. Lack of Awareness, Information and Understanding of GSI

A major challenge is the general lack of understanding, appreciation and knowledge regarding GSI among agency staff and local and regional partners. To date, much of ACCD's GSI-related work focuses on the larger issues of flood resilience and disaster recovery. There is also a perception that GSI is a natural resource issue, in ANR's mission, not ACCD's. We need better awareness that GSI is an essential component of downtowns, villages and neighborhoods. Insufficient information about GSI and its benefits exacerbates this problem. We need additional research and data to prove GSI is a viable, cost effective, and permanent solution. Local and regional partners must provide outreach and resources to promote and encourage the development of GSI.

2. Lack of Understanding of GSI in a rural context

In rural settings, forests, fields and other open spaces can capture and slow the flow of stormwater, particularly when combined with smaller scale GSI techniques. Farm and forest managers often engage in practices to convey stormwater away from those lands for economic or aesthetic reasons. They could design these lands to accommodate occasional inundation with rain gardens, depressions, ponds, swales, and plants that can tolerate occasional inundation, and by improving the porosity and water-retaining capability of the soils. Using these techniques helps reduce damage from flooding and recharges aquifers. Increasing knowledge of how GSI applies in rural settings to mitigate flooding and build resilient communities is vital.

3. The need to explore watershed-wide stormwater management

Flood damage mitigation measures, such as constructing levees or armoring banks, implemented in one jurisdiction within a watershed can have unintended consequences for other communities in that watershed. Recognizing this fact, some communities are taking a regional and watershed-wide approach to stormwater management. Communities can develop stormwater master plans for their watersheds and use river science and watershed modeling to understand what actions will absorb and slow down stormwater across the watershed to reduce or mitigate flooding. These stormwater master plans should incorporate GSI strategies.

4. The need to adopt stormwater management regulations that include green stormwater infrastructure best practices

In Vermont, the state regulates stormwater for developments exceeding one acre of impervious surface. However, stormwater runoff from smaller developments also contributes to flooding problems. To meet regulations, developers often use “Hard” engineering solutions. Projects should consider “softer” green infrastructure (GSI) approaches as an alternative or supplement to structural solutions in both small and larger scale developments.

5. Consider GSI early in the planning process

ACCD and local municipalities need to better integrate GSI and stormwater concerns early in the planning process for capital improvements, public and private facilities, and residential and commercial development. ACCD with ANR’s lead needs to improve capacity building to increase local knowledge and awareness of stormwater management issues and GSI.

6. Lack of incentives and awareness of agricultural and other land owners to implement stormwater mitigation measures

Agricultural land in floodplains provide flood storage capacity and absorb stormwater runoff during heavy rain events, reducing flood-related damage and associated losses. Local communities should collaborate with conservation organizations and the agricultural community to reduce flood risk through the purchase of conservation easements on farmland or by providing other incentives to agricultural landowners to implement stormwater mitigation measures and GSI strategies.

7. Limited development and lack of awareness of GSI projects in Vermont

There are currently limited GSI built projects across the state. We must work to promote more projects that highlight the benefits of GSI and test their effectiveness in Vermont. Without real world built GSI projects that are time tested, developers and municipal

officials are hesitant to incorporate GSI into new construction and redevelopment projects. The perceived risk associated with a new or untested design is simply too great to take in many cases.

8. Lacking incentives and lack of funding to incorporate GSI into projects

One way to increase implementation of GSI is through incentive-based programs and additional funding. Unfortunately, very few GSI incentive and funding programs exist in Vermont. Much of the state funding used to implement GSI projects comes from either ANR's Ecosystem Restoration Program (ERP) Grants or Watershed Grants. ACCD provides priority consideration for Municipal Planning Grants projects that deal with flood resiliency and the Downtown Transportation Grant Program provides limited funding for GSI projects in Designated Downtowns. Grants, rebates, recognition programs, discounts, and development incentives (expedited permitting, decreased fees, zoning upgrades, and reduced stormwater requirements) have not yet been used on a large scale to promote GSI. Use of these tools will result in greater adoption of GSI throughout the state.

9. Uncertainty about how to incorporate GSI concepts into existing programs

The GSI Strategic Plan identifies strategies at the state level to promote GSI but does not detail specific actions. In order to move this initiative forward, we need to work out additional details. For example, Vermont's Village Greens are a perfect place to display GSI in action. Yet before that can happen, we must outline the process to assess village green infrastructure, determine how to prioritize projects and identify funding sources.

10. Need for stronger leadership and implementation of GSI

Finally, we need stronger leadership. It is unreasonable to expect people to deviate from traditional development and stormwater management practices without significant support, encouragement, and resources. ANR has made significant progress we must continue to demonstrate the use of GSI on state lands, develop and disseminate a consistent message, and promote the use of GSI in both urban and rural settings. Because GSI is a fairly new concept, this type of leadership is needed at all levels, from field staff directly involved in implementation to upper level managers looking at the benefits of GSI on a statewide scale.

d. Opportunities and Strategies

ACCD intends to improve its ability to promote and support GSI utilization. In conjunction with implementation of the GSI Strategic Plan, ACCD will undertake the following tasks:

Task	Task Description	Executive Order Items Addressed	Challenges Addressed
1.	<p>Review existing agency processes and programs and develop a plan for incorporating GSI concepts. Pay particular attention to the following:</p> <ul style="list-style-type: none"> • Flood Resilience and Hazard Mitigation Planning • Land Use Planning and Regulation • Growth Center Designation • Downtown/Village Center Designation and Revitalization • Downtown/Village Center Master Planning and Design 	A	C8, C9
	<ul style="list-style-type: none"> • Promoted GSI (slow it, spread it, sink it) as one of four flood resilience objectives for outreach to municipalities through the EPA funded Smart Growth Implementation Project. • Statutory change made in 24 VSA §2793c, added stormwater facilities to the list of necessary infrastructure to support growth center development as a part of the Capital budget requirement for designated Growth Centers. See Act 146. 		
2.	Consider incorporation of GSI concepts as appropriate when developing and implementing new programs and projects.	A	C1, C8, C9
3.	Provide and/or Promote training opportunities to ACCD staff and local and regional partners to increase knowledge of GSI.	A, D	C1, C2
6.	Investigate the modification and development of funding sources to support the utilization of GSI. Consider adding priority consideration for GSI into Municipal Planning Grant and Downtown Transportation Grant selection criteria.	A, F	C6, C7
	<ul style="list-style-type: none"> • The FY16 Municipal Planning Grants will give priority to infrastructure planning projects in designated centers. Attachment 3 provides guidance to municipalities on that priority with links to ANR’s stormwater master planning and GSI resources. 		
7.	Seek opportunities for greater inter-agency and intra-agency collaboration and cooperation.	A, D	C2
	<ul style="list-style-type: none"> • ACCD is working with ANR and VTrans to arrive at solutions that will enable street trees (and potentially other green infrastructure) in state highway rights-of-way in designated villages, downtowns and other centers. 		
8.	Assist external partners in efforts to provide GSI assistance, outreach, and training to municipal entities, private landowners, and design professionals. Determine specific funding needs.	F	C1, C4, C9, C10
	<ul style="list-style-type: none"> • ACCD held a downtown managers meeting in downtown St. Albans. The highlight was a tour of downtown streetscape improvements. 30+ participants from around the state viewed and discussed the innovative GSI features. 		
9.	Revisit the GSI Implementation Work Plan and review progress. Add additional challenges and opportunities as necessary. Continue to assume leadership role on the Interagency GSI Council.	A,B,C,D,E,F	C10
	<ul style="list-style-type: none"> • ACCD continues to participate in the GSI Council and continues to look for opportunities to address GSI in its programs. 		