

Executive Summary

The purpose of the Vermont Green Infrastructure Strategic Plan 2011-2013 Performance Report is to enable stakeholders and the public to see how well we performed over the last three years in regards to our strategic goals for low impact development (LID) and green stormwater infrastructure (GSI).

The plan is comprised of four strategic objectives and performance was determined by evaluating the progress made on the 49 tasks associated with those objectives. For each task, this report includes a short summary of what was accomplished as well as a general progress indicator. These evaluations are by no means all-inclusive and are used simply to reveal where our efforts have been successful and where they could be improved.

Overall, the trends are positive:

- There has been an increase in the number of training opportunities available for design professionals and interest in additional trainings continues to grow.
- Efforts to raise municipal awareness of low impact development principles are on the rise and bylaw reviews in a number of towns are currently planned or underway.
- Numerous non-profit groups have taken a lead role in educating the public about stormwater issues, bolstering their work by also offering financial and technical assistance.
- The state has made a commitment to sustainable stormwater management through Executive Order 06-12 and support of the Green Infrastructure Initiative. Additionally, LID principles and GSI practices are being considered as part of the Vermont Stormwater Manual revision process.

Nevertheless, we have a good deal of work to do.

The level of understanding of LID and GSI in Vermont is still low and many projects are deemed “demonstration.” LID and GSI concepts have not been adopted on a large scale and many developers are still hesitant to commit to their use.

Although VLCT developed model LID bylaws a few years back, only a few Vermont towns have adopted them and even then only on a piecemeal basis. Many existing regulations conflict with the intent of LID and so additional outreach to towns is needed.

Efforts to educate property owners about LID and GSI have been done in a sporadic manner based on funding and interest. Vermont still lacks a comprehensive education plan related to LID and GSI.

The adoption of LID and GSI in Vermont could be enhanced by the development of dedicated funding sources such as state grants.

The Vermont Green Infrastructure Strategic Action Plan 2014 – 2019 will provide an opportunity to improve on the work accomplished so far.

Introduction

The Green Infrastructure Initiative (GII), an Agency of Natural Resources undertaking with support from the Department of Environmental Conservation, the Ecosystem Restoration Program and the Department of Forests, Parks and Recreation, adopted the Vermont Green Infrastructure Strategic Plan 2011-2013 (the “Plan”) in late 2011. The plan was developed with assistance from the Green Infrastructure Roundtable (the “Roundtable”) and lays out a vision for the promotion, adoption, and implementation of LID and GSI in Vermont.

The Plan has one overarching goal: to restore and maintain the pre-development hydrology of the State’s watersheds through the use of LID principles and GSI practices. To achieve this goal, four key audiences are targeted: stormwater professionals (i.e. design engineers, landscape architects), municipal governments, property owners, and State agencies. For each target audience, the Plan identifies a set of challenges and describes the objectives and tactics needed to address those challenges.

Over the course of the past three years, the GII and the Roundtable collaborated to further the objectives outlined in the Plan. These efforts encompass the work of many individuals and entities throughout Vermont. This collective work has allowed us to make significant progress towards sustainable stormwater management in the state.

Now as the Plan comes to a close, we take this opportunity to look back on the work accomplished to date.

The following report provides a qualitative evaluation of our efforts over the past three years.

Objective 1: Design professionals statewide are trained in, promoting, and utilizing GSI practices.

➤ **Tactic A. Increase training opportunities for professionals.**

- 1. Offer yearly training in utilizing GSI practices via the stormwater manual. Seek professional credits i.e. Engineers, LA’s, CPESC.**

Status - Satisfactory

On June 15, 2011, the GII hosted a day long training titled “Low-Impact Development & the Vermont Stormwater Management Manual: Tips for Incorporating LID on Jurisdictional Sites.” The workshop provided technical assistance to design professionals, engineers, and architects looking to incorporate LID practices into new and existing developments while meeting the treatment standards outlined in the Manual. Additional trainings were considered for 2013 but not planned due to the impending revision of the Manual. Trainings will resume once the new manual has taken shape.

- 2. Offer quarterly web-trainings on GSI practices.**

Status – Satisfactory

Starting in 2013, the GII hosted a series of webinars related to GSI. These webinars included “Quantifying the Benefits of Trees: An Overview and Introduction to i-Tree,” “Using i-Tree Hydro to Model Green Infrastructure,” “Valuing Green Infrastructure: Economic, Environmental, and Social Benefits,” and “The Green Infrastructure Portfolio Standard.” Total participation was roughly 580.

3. Offer yearly in-depth training on the technical aspects of GSI practices.

Status – Satisfactory

Two trainings were held on the technical aspects of GSI. The first was titled “Site Design Using Green Infrastructure & LID Techniques” and took place on August 17, 2011. The course took participants through the planning process using the green infrastructure planning practices and real world site examples. The second training titled “Green Stormwater Infrastructure: Soil at Work” took place on October 24, 2013. This full day workshop provided an in-depth introduction to soils including formation factors, classification, drainage classes, infiltration rates, infiltration testing, and how all of these factors play a role in sustainable stormwater management. Total participation in both workshops was 66.

4. Investigate GSI training/certification programs for design professionals that include incentives i.e. expedited permitting.

Status - Satisfactory

The GII discussed the possibility of a green stormwater infrastructure certification program for on-site installers (on-site installers, landscapers, etc.) with the Drinking Water and Groundwater Division. Similar discussions took place with Lake Wise. The concept is in the very early stage of development.

5. Establish training partnerships with design professional associations.

Status – Satisfactory

The GII has successfully worked with the Vermont Chapter of the American Society of Landscape Architects, Green Works, the Vermont Chapter of the International Erosion Control Association, and the Center for Watershed Protection Association.

6. Offer training with CEUs to wastewater design professionals in GSI practices.

Status - Satisfactory

Wastewater design professionals were given an opportunity to receive CEU’s as part of the “Soils for Stormwater” workshop, which was held on October 24, 2013.

7. Identify and promote higher educational programs that support GSI work.

Status – Excellent

A number of educational programs focused on GSI were promoted by GII through the GIR Google Group. These included programs run by Yale University, University of Washington, and Forester University.

➤ **Tactic B. Improve communication between design professionals working with stormwater.**

1. **Investigate and promote existing networks of design professionals - i.e. NPS Information Listserv.**

Status – Satisfactory

GII promoted and utilized a variety of professional networking tools including the EPA NPSInfo listserv and EPA GreenStream listserv.

2. **Develop a Vermont specific networking tool for design professionals.**

Status – Satisfactory

In mid-2013, GII launched a Google Group to serve as an extension of the GIR. A number of design professionals are participants in the Group. Until a better system is found, the Groups will serve as the networking tool for design professionals.

3. **Develop a database of design professionals utilizing GI practices.**

Status – Needs Improvement

Little work has been done on this task aside from some preliminary discussions about how professionals might be tracked. At the moment, it is not a high priority.

4. **Investigate adding GI project designation in existing stormwater permit database.**

Status – Needs Improvement

Little work has been done on this task given the current state of the Vermont Stormwater Management Manual. This should be revisited once the manual has been revised.

➤ **Tactic C. Provide tools & resources for design professionals to incorporate GSI on projects.**

1. **Work with the media to promote GI messages, practices and projects.**

Status – Satisfactory

We have had some success in this area, as there are a number of great examples of individual groups that have successfully capitalized on the media to promote their message. The new WSMD blog has also featured a number of articles on GSI. Unfortunately, the efforts have been somewhat fragmented. We are still in need of a messaging and outreach strategy.

2. **Compile and share data demonstrating benefits associated with GI practices with an emphasis on cost savings.**

Status – Satisfactory

A good amount of this information has been shared through either the GI Google Group or GII sponsored webinars. We could do more to make the resources readily available. Part of it has to do with website limitations.

- 3. Develop and disseminate supporting documentation & tools on how to use GI practices to meet the current stormwater regulations i.e. calculation worksheets, workshop proceedings.**

Status – Satisfactory

The GII is working closely with the Vermont Stormwater Program on the Vermont Stormwater Manual revision and expects to see LID and GSI as a strong component when the manual is approved. Much of the work required on this task will take place after the revision is complete.

Objective 2: Municipalities understand the impacts of stormwater runoff and work to mitigate the effects.

➤ **Tactic A. Municipalities regulate land use with an understanding of the impacts on water quality and natural hydrologic systems.**

- 1. Identify and assess the barriers to GI in current municipal regulations.**

Status – Satisfactory

The Vermont Association of Planning and Development Agencies (VAPDA) is under contract to review regulations for a set of targeted towns. They will be making recommendations on bylaw changes to promote LID. Many other municipal efforts are taking place with a variety of partners including but not limited to the Friends of Northern Lake Champlain and the Friends of the Winooski River.

- 2. Develop set of tools and training opportunities for local planning review boards to assess the hydrologic impacts of development activities.**

Status – Satisfactory

As part of VAPDA's GI Initiative, they will develop a LID toolkit for municipalities, which will help municipalities understand the impacts of development activities and the benefits of LID and GSI. The toolkit will be supported by 11 regional training sessions.

- 3. Develop and disseminate library of financial and technical resources to support local GI planning efforts.**

Status – Satisfactory

As part of VAPDA's GI Initiative, they will develop a LID toolkit for municipalities, which will include much of this information. The toolkit will be made available through the VAPDA website.

- 4. Work with ANR's Ecosystem Restoration Program (ERP) to include preference in grant applications for municipalities who are addressing the impacts of stormwater locally.**

Status – Satisfactory

The GII had preliminary discussions with ERP about funding preference for LID and GSI projects. Those discussions are ongoing.

- 5. Identify mechanism to support demonstration projects on municipal properties.**

Status – Satisfactory

The GII researched funding mechanisms for municipal demonstration projects through the country. The New York Green Infrastructure Grants Program is one example of what could be implemented in Vermont. GII, ERP, and the Facilities Engineering Division are discussing possibilities in regards to the State Revolving Fund.

➤ **Tactic B. Municipalities provide regulatory support for stormwater management.**

- 1. Strategize which towns need GI regulations most and partner with Non-point Education for Municipal Officials Program (NEMO) and Vermont League of Cities and Towns (VLCT) to reach out to them with existing VLCT by-law materials.**

Status – Satisfactory

VAPDA is under contract to review regulations for a set of targeted towns and provide recommendations. VLCT is a partner in the project.

- 2. Provide access to model GI regulations.**

Status – Satisfactory

Model LID bylaws were developed by VLCT and are posted on both the VLCT and GI websites. Active outreach aside from what is being done by VAPDA is limited.

- 3. Offer yearly technical training to municipal planning commissions / development review boards on how to evaluate new development projects for GI components.**

Status – Needs Improvement

No action has been taken on this task given limited staffing and funding. This should be a priority moving forward.

➤ **Tactic C. Municipalities provide non-regulatory incentives to reduce stormwater runoff.**

- 1. Develop financial resources guide for local GI implementation.**

Status – Needs Improvement

Very little action has been taken on this task aside from some preliminary research.

- 2. Investigate offering expedited stormwater permitting to towns with GI bylaws.**

Status – Needs Improvement

Little work has been done on this task given the current state of the Vermont Stormwater Management Manual. This should be revisited once the manual has been revised or during the revision process.

- 3. Develop outreach material on incentives options.**

Status – Satisfactory

The GII researched and documented various incentive programs throughout the country. The information needs to be collated, formatted and shared through the GI Google Group.

Objective 3: Property owners voluntarily advocate for and implement GSI practices.

➤ **Tactic A. Property owners are aware of, understand, and feel empowered to address the environmental issues associated with stormwater runoff and the options available to address them.**

- 1. Inventory and assess existing messaging / outreach campaigns for stormwater in Vermont.**

Status – Needs Improvement

No action has been taken on this task. This should be a priority moving forward.

- 2. Identify gaps & assess the effectiveness of existing stormwater messaging / outreach campaigns.**

Status – Needs Improvement

No action has been taken on this task. This should be a priority moving forward.

- 3. Work with Green Infrastructure Roundtable to develop a targeted, statewide messaging / outreach campaign to fill gaps in existing messaging.**

Status – Needs Improvement

No action has been taken on this task. This should be a priority moving forward.

- 4. Work with partners to spread key GI messages to target audiences.**

Status – Satisfactory

The formation of the GI Google Group has provided a means of spreading and sharing information quickly between the GII and partners. Partners have been quite effective at then spreading the message to property owners and the public. However, this work would be greatly enhanced by the completion of tasks 3A1, 3A2, and 3A3.

➤ **Tactic B. Developed property owners have access to accurate technical and education information for implementing GSI practices.**

- 1. Develop an interactive website on GI practices with details on installation.**

Status – Satisfactory

The State's GI website was recently updated to include more details about LID and GSI including educational resources, webinar recordings, and specification. For the time being, this serves as the statewide portal for GI information. An in-depth update to the website is being discussed.

- 2. Provide access to technical training on GI practices.**

Status – Excellent

The GII hosted a number of trainings over the course of the past few years. Training information was recorded and disseminated through the GI Google Group and other professional affiliations.

3. Offer mechanism to match GI experienced professionals to interested property owners.

Status – Satisfactory

The GII discussed the possibility of a green stormwater infrastructure certification program for on-site installers with the Drinking Water and Groundwater Division. Similar discussions took place with Lake Wise. The concept is in the very early stage of development.

4. Review existing technical & educational resources to identify gaps.

Status – Needs Improvement

No action has been taken on this task. This should be a priority moving forward.

5. Develop technical and educational resources to fill in identified gaps.

Status – Satisfactory

Despite the lack of an educational gap analysis, GII did produce a series of facts sheets on GSI concepts. A follow-up series focused on LID will be released in early 2014. GII also worked with UVM students to develop two educational videos.

➤ **Tactic C. Offer incentives for developed property owners to implement GSI practices.**

1. Seek grant funding and partnerships to offer financial aid to private landowners to install GI practices on their properties.

Status – Satisfactory

A number of programs were successful in receiving funding for residential stormwater incentives such as Let it Rain and BLUE[®]. Sources of funding included ERP, Watershed Grants, and the Lake Champlain Basin Program.

2. Investigate recognition/certification programs for GI.

Status – Satisfactory

The GII researched a number of certification/recognition programs throughout the country including SITES[®] and LEED[®], and local programs BLUE[®] and Vermont Lake Wise. A program that solely recognizes GI projects of merit would be beneficial and should be investigated further.

3. Capture & share success stories.

Status – Satisfactory

ERP recently changed its reporting requirements to include a blog post at project completion in an effort to increase the dissemination of success stories. This will be particularly helpful for GI projects funded through the program. Additionally, partners have shared stories through press releases, news articles, and TV coverage.

Objective 4: State agencies secure and commit funding to develop policies and programs to support GSI.

➤ **Tactic A. The Vermont Stormwater Program encourages the use of GSI practices.**

1. Identify GI gaps in the current stormwater manual and promote updates/amendments.

Status – Excellent

This is being accomplished as part of the Vermont Stormwater Manual Revision process.

2. Support regional stormwater coordination and project implementation.

Status – Satisfactory

The GII reconvened the Roundtable in 2013 after a short hiatus due to limited staffing. The Roundtable provides a mechanism for coordinated stormwater management and project implementation. This was further enhanced by the development of the GI Google Group.

3. Identify opportunities for a dedicated funding stream to support regional coordination and implementation efforts.

Status – Satisfactory

The GII researched funding mechanisms in other states and looked closely at the mechanisms being used in Vermont. The development of a Water Quality Trust, as identified in Act 138, is probably the best option for a dedicated funding source.

4. Encourage the VT Stormwater Program to require the use of GI practices before conventional treatment practices in permitting.

Status – Excellent

As part of the revision to the Vermont Stormwater Management Manual, the Vermont Stormwater Program is strongly considering the inclusion of LID principles and GSI practices. GII plays an active role in the revision process.

➤ **Tactic B. The State supports a recognizable GI Initiative.**

1. Vermont supports GI Program with staffing.

Status – Excellent

The State hired a limited service GI Coordinator in February of 2013 and continues to support the position.

2. Provide a clear identity, mission and purpose for the GI Program.

Status – Excellent

The identity, mission and purpose of the GI program are clearly articulated in the GI Strategic Plan 2011-2013. The Plan provides the framework for the GII.

3. Establish an advisory board to the GI Program.

Status – Satisfactory

The Roundtable acts as an advisory body to the GII. The GII is in the process for formalizing the roles and responsibilities of that group.

4. Identify existing programs / initiatives that the GI Program can be integrated into.

Status – Satisfactory

The GII took a lead role in the development of the ANR and Agency GSI Implementation Work Plans. Through that process, GII work across divisions, departments, divisions, and agencies to find opportunities for the integration of GI.

5. Develop relationships / partnerships to sustain the GI Program.

Status – Satisfactory

The GII continues to expand its relationships/partnerships through the Roundtable, GI Google Group, and training opportunities.

➤ **Tactic C. State agencies serve as a role model for GSI implementation.**

1. Identify state agency liaisons to champion efforts internally.

Status – Excellent

Through the formation of the Interagency GI Council, state agency liaisons have been identified in ANR, BGS, and VTrans. The group meets quarterly.

2. Draft an Executive Order or legislative language requiring all State development projects to use GI practices.

Status – Excellent

Governor Shumlin signed Executive Order 06-12 in 2012. The Order led to the creation of the Interagency GI Council and the development of the Agency Implementation Work Plans. The Order lasts five years.

3. Support development of technical guidance for implementation of GI practices on state projects.

Status – Satisfactory

This task was identified as a high priority by the Interagency GI Council. The GII and FPR sought funding from the Forest Service and will know whether the request is approved in 2014.

Attachment A: Progress Matrix