

**Chittenden County Regional Stormwater Educational Program  
Annual Review: 2013- 2014 Program Year Summary**

The 2013-2014 program year (March 1, 2013 through February 28, 2014) has been a transition year for the Regional Stormwater Education Program (RSEP). *Marketing Partners, Inc.* of Burlington, the Program's contract marketing firm since its inception was retained through June 2013. A new marketing agency, *J. Andrews Marketing* was retained starting in August of 2013. The MS-4s worked with *J. Andrews Marketing* to analyze the results of RSEP's 5 year survey led the RSEP to decline to initiate a Fall 2013 campaign and instead take the time to plan for and begin to implement revisions to the program. To continue outreach efforts, the RSEP helped to co-sponsor the Let it Rain Program's, "Connecting the Drops" rain barrel exhibit which received significant media attention.

Key messages of the campaign remained the same and included stormwater runoff and stormwater systems education, and tips on prevention methods related to fertilizers and chemicals. The focus of the spring advertising campaign was to reduce fertilizer use and runoff through the use of soil testing to determine if fertilizer was needed.

**Completion of replicate survey to gauge Program effectiveness** The RSEP again hired UVM's Center for Rural Studies to implement RSEP's survey in July 2013 which takes place every 5 years so as to measure program effectiveness. 3,444 households in the nine RSEP municipalities were contacted via phone with 449 of those completing the survey. The results were similar to those obtained in 2008 with notable differences as follows:

- Many more people believe that stormwater that runs across their driveway is absorbed into the ground.
- There has been an increase in people who have tested their soil (though there is room for many more to join them). More educated people are more likely to soil test.
- There has been a significant drop in people who fertilize. However, of those that do fertilize, they are doing so multiple times per year. Our core demographics are the biggest offenders (35-64 year olds, homeowners) with one exception- less educated people tend to be "multiple fertilizers" more often than their educated counterparts.
- Significantly fewer people say that the downspout from their gutters lands on the lawn.

**Spring Advertising Campaign** The media campaign included four weeks of radio spots on VPR, WCPV, WEAV and WEZF; four weeks of cable TV spots in the Chittenden County area on the following channels (ESPN, TNT, HGTV, TLC & TWC; print ads in member community newspapers; and four weeks of advertising on Front Porch Forum (an opt-in community e-newsletter). The spring 2013 media expenditure totaled \$20,000 approximately the same level of spending as both the spring of 2012 and the spring of 2011.

**Extension of the "Soil Test" campaign** In partnership with the University of Vermont (UVM) Agricultural Testing Lab, the RSEP continued to provide the opportunity for residents with the MS4 area to obtain a free soil test. The ad campaign drove people to the RSEP website where 294 eligible program residents downloaded a printable coupon during this program year compared to 226 in the prior program year. UVM continues to track the number of coupons actually redeemed during paid media campaigns. 43 tests were submitted in 2013-2014 compared to 39 tests in 2012-2013 and 36 tests in 2011-2012. Overall visits to the "soil test" page ("page views" remained stable at 795 visits in 2013-2014 compared to 803 in 2012-2013.

**Sponsorship of complementary efforts** Through a contribution of \$12,500 RSEP became a chief sponsor of the Let it Rain Stormwater Program's "Connecting the Drops" rain barrel exhibit. This project identified the problem of limited public awareness of the issues of stormwater pollution and proposed methods to link this serious message with a fun and engaging outdoor art exhibit in the summer of 2013. The exhibit consisted of nineteen professionally painted rain barrels installed on pedestrian ways in downtown Burlington; Weekly concerts on Church Street throughout July (logo on signage, information at event booth, barrel giveaways, announcement from stage); Frog Hollow Signage (logo placement); Extensive print media campaign in *Seven Days* and *Kids VT* (logo placement); Signage and exhibit space at ECHO museum (logo placement) and South End Art Hop Auction Event (logo placement, barrel giveaway and auction, event speech, auctioneer recognition). In order to track the efficacy of the barrel in reaching residents of MS-4s towns, each barrel was fitted with a sign with the RSEP logo and stating "Win your own rain barrel: Scan here to sign up" and a QR code. A total of 811 visits to the project's website came via these QR scans on the barrels. 202 of those who scanned answered the prompted question of where they lived and 136 of those (63%) came from an RSEP member community. Through this QR signage and other events, 507 people signed up to try and win a free rain barrel. The project (and RSEP as a sponsor) also received significant exposure in the form of visitors and passers-by of the tabling event and sponsored music performers on Church Street (which has over 1.5 million summer visitors annually). The Let it Rain Program estimated 150 people attended each event with approximately 15 mailing list sign ups during each of the seven weeks. Last, it should be noted that RSEP included a link to the project on smartwaterways.org. Of the total summer traffic of 3,187 visits to the project website, 664 of those came from smartwaterways.org. The project as a whole received extensive media coverage (eight independent news stories).

**Increased website traffic** As detailed below, unique visits grew substantially to the Program's website, [www.smartwaterways.org](http://www.smartwaterways.org)

## Gross Impressions / Audience Reach

### 1. Unpaid Media (Public Relations) Fall PR Campaign

Instead of a fall paid advertising campaign, J Andrews Marketing and CCRPC did support a press outreach campaign with the goal of educating the press about RSEP and its initiatives. A template editorial was developed which was then adapted by individual MS4 and published as follows:

Editorials ran:

- The Other Paper, South Burlington, Circulation: 9,800  
(<http://edition.pagesuite-professional.co.uk//launch.aspx?eid=3f9dfe35-2c0e-43ca-a0fd-587daa321e18>)
- The Williston Observer, Circulation: 5,000  
(<http://www.willistonobserver.com/guest-column-communities-work-together-to-improve-water-quality/>)
- The Essex Reporter (not available online) Circulation: 8,800  
<http://www.essexjunction.org/news/item/communities-work-together-to-improve-water-quality/>
- The Colchester Sun (not available online) Circulation: 6,200 and published in Colchester School District "Spotlight" online news  
<http://csdspotlight.org/2013/12/>
- Front Porch Forum in South Burlington, Williston, Essex, Colchester. Approximately 14,000 impressions
- Total unpaid impressions for editorial campaign: 43,800

*Prepared by J Andrews Marketing and Chittenden County RPC*

In addition, editorial meetings were conducted with:

Michael Page, Fox 44/ABC 22; Taylor Dobbs, Vermont Public Radio and Kathryn Flagg, Seven Days (Circulation: 33,417). These meetings resulted in specific ideas for stories that the reporters are interested in covering in the future, likely in Spring and/or Summer 2014.

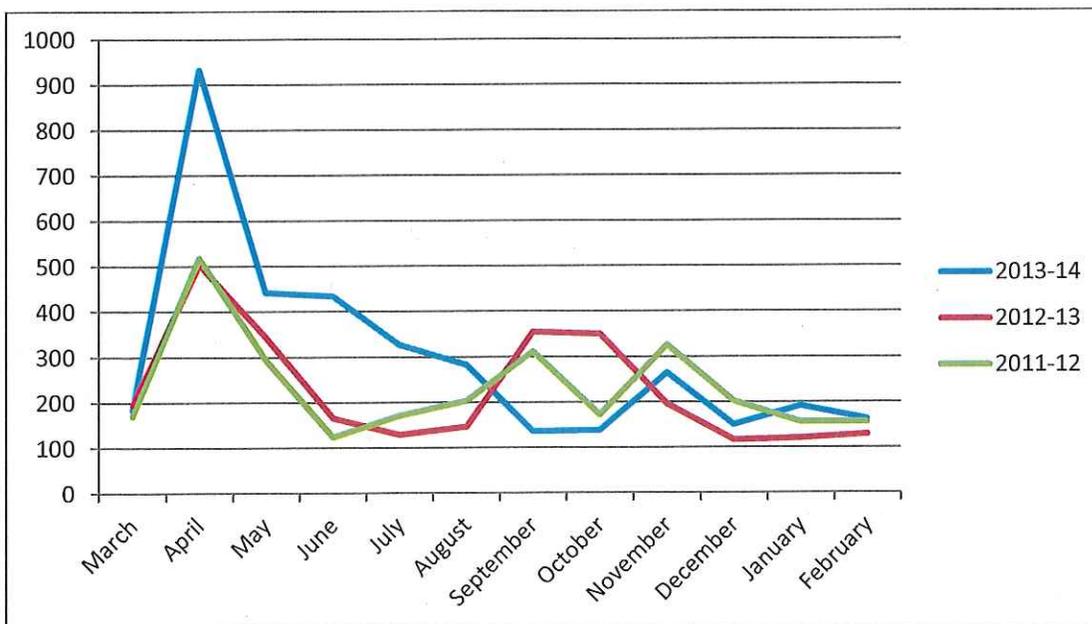
## 2. Total Paid Media Impression, 2013 (Spring Campaign only)

The 2013-2014 paid media budget was only \$20,000 and was focused only on the spring compared to RSEP's usual pattern of a \$20,000 spring buy and a \$10,000 early fall buy. In addition to maintaining advertising in the usual commercial outlets of cable TV, radio and local print, RSEP again advertised through online sponsorships via Front Porch Forum. Overall, impressions were down to 1,440,046 compared to 2,111,804 in the 2012-2013 Program Year.

Print:	796,068
Cable TV:	60,060
Radio:	283,918
Online:	300,000
<b>TOTAL:</b>	<b>1,440,046</b>

## 3. Traffic to Program Website ([www.smartwaterways.org](http://www.smartwaterways.org))

Below is the website visitor information for 2013-2014, as compared to the two preceding years. The program year had 3,645 visits, significantly higher than visits in the two preceding years. Website traffic increases/spikes are in conjunction with the RSEP media campaigns and in the case of Spring and Summer 2013, due to the increased exposure from RSEP's sponsorship of the Connecting the Drops campaign.



**Appendix B – Summary Data for [www.sburlstormwater.com](http://www.sburlstormwater.com)**

**MCM #2**  
**Chittenden County Stream Team**  
**Summary of Activities January-December 2013**

This report summarizes CCST activities in the 2013 calendar year. Demographic data about participant numbers from each town is presented in tabular form following the narrative.

## **Social Media**

### **Facebook**

- 83 "likes"-- a 26% increase in likes from 2012 annual report numbers (66 likes)
- 40% of the people who like CCST are from Burlington (33 people)

### **CCST Website**

Google Analytics provides website traffic data from January 1, 2013 to December 31, 2013:

- 801 visits, spending an average of 3 minutes and 10 seconds on the website per visit
- 2,619 page views
- 62.9% of visitors were new visitors to the site; 37.1% of visitors were returning visitors.
- The number of visitors to the website has remained steady; there were 802 visitors in 2012.
- The highest spike in page views occurred after the fall newsletter was mailed. Other spikes occurred in the days following the Connecting the Drops rain barrel auction and throughout the summer after outreach events. On average, the busiest months for web traffic were May, June and October.

### **Newsletter and e-correspondence**

- In 2013, there were 261 subscribers to the CCST newsletter, up 8% from 241 in 2012.
- A fall newsletter was sent out in October with a 36% open rate. CCST E-News open rate is high; the typical open rate for similar industries is between 20-25% according to research completed by Mail chimp.
- A targeted e-mail was sent to Shelburne residents to understand interest in holding a rain barrel workshop in their community. We received positive feedback and will be holding a workshop in spring 2014.

## **Organizational Partnerships**

- Department of Corrections has taken a leadership role in rain garden maintenance near their facilities.
- Chamberlain Elementary School in South Burlington continues to work with the Stream Team to provide education to students and to install rain gardens on school property
- Boy Scout Troop #631 in Milton has requested to work with the Stream Team to receive educational information and to plan volunteer events
- A local landscaper has agreed to donate plants when available to our rain garden efforts. In 2013, Ann Pearce provided CCST with dozens of iris, lobelia and native grasses for multiple rain gardens (Chamberlin School, South Burlington; Brownell Library, Essex Junction; Department of Corrections, South Burlington and Coast Guard Station, Burlington).
- During the 2013 Connecting the Drops summer concert series on Church Street, CCST partnered with the Let it Rain program (administered by Winooski Natural Resources Conservation District and Lake Champlain Sea Grant) to provide outreach during the weekly concert events in July. Tabling on church street gave CCST the opportunity to potentially provide outreach to 750 people.

## **Media**

Copies of each article are archived in the CCST 3-ring binder housed at the office of the CCST chair.

- South Burlington "[The Other Paper](#)" news story on Chamberlin Elementary School's rain garden installation (9/05)
- South Burlington "[The Other Paper](#)" news story on South Burlington Library Rain Garden (10/03)
- South Burlington Magazine "South Burlington Life" news story on SB Library Rain Garden (10/2013)



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**Outreach**

- Outreach Events (Tabling) See data tables for detailed outreach audience information
  - Milton Community Dinner (3/11/13)
  - Kids' Day, Burlington (5/11/13)
  - Connecting the Drops Concert Series (Wednesdays in July)
  - Town of Essex and Essex Junction Block Party (7/21)
  - Shelburne Farmers' Market (7/27)
  - Williston Farmers' Market (8/7)
  - Essex Free Library (8/15)
  - Shelburne Harvest Festival (9/21)
  - Essex Heart and Soul Volunteer Fair (9/25)
  - Essex Junction 5 Corners Farmers Market (9/27)
  - Essex Fire Station Open House (10/12)
- Milton Scout Troup Presentation (7/31)
  - Presented and discussed stormwater with Scout Troup in Milton

**Event-Driven Tasks**

- Milton Lamoille River Walk Clean Up (May 18<sup>th</sup>, 2013)
  - Partnered with Milton Youth Coalition and Milton Conservation Commission
  - 10 volunteers attended and worked on trail repairs and clean-up
- South Burlington Library Rain Garden Installation
  - Installed by 39 volunteers on May 17<sup>th</sup>, 2013 and thoroughly tested by heavy rainstorms
- Water Quality Monitoring
  - Volunteer response was high: 27 expressed interest from throughout Chittenden County (including areas where we do not currently have sampling sites, like Jericho)
  - Volunteer training was held on June 18<sup>th</sup>, 2013 in Williston
  - Water Quality Sampling occurred on five scheduled dates (6/25, 7/9, 7/23, 8/13, 8/27) as well as sampling during rain events. Data was uploaded to CCST [website](#).
- Shelburne Longmeadow Flow Monitor
  - Data collected by a volunteer (Shelburne) has been compiled through December 2013
- Chamberlin School in South Burlington installed a third rain garden 8/29 and 30<sup>th</sup> 2013
  - 30 children, 3 teachers, 2 parents volunteered
- Lamoille River Walk Stream Clean Up in Milton 10/26
  - Milton Boy Scout Troop #631, 5 youths, 2 adults
- McCabe Brook Clean-Up in Shelburne 10/31
  - Shelburne Central School, 20 students and 1 teacher participated
- Adopt-A-Rain Garden
  - Volunteer Work Days: Maintenance occurred on 3 rain gardens with the help of 6 volunteers (1 Burlington, 3 Essex Junction and 2 South Burlington)
  - On-Going Volunteer Activity: Rain garden adopters maintain gardens throughout the year by making sure they are functioning properly and weeded/planted as needed (1, Burlington, 2 South Burlington, 1 Williston)
  - Rain Garden Status Information: Landry Park rain garden in Winooski is in need of repair. Callahan Park rain garden in Burlington functions well and has an active volunteer adopter, but has a sink hole in need



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of repair. The Coast Guard Station rain garden in Burlington had an active adopter until the end of the summer; the garden needs a new adopter. Williston Town Annex rain garden is in need of maintenance and an adopter.

The target towns for hands-on participation in 2013 were Milton, Winooski, and Shelburne. The target numbers (based on the attached workplan) were met in Milton and Shelburne, but not in Winooski. The target number was not met in Winooski because the events planned to meet the target were implemented in the fall of 2012. There were 116 participants in outreach activities in Winooski during the fall of 2012. The CCST work plan shifted from being developed on a fiscal year basis (June-July) to a calendar year basis (January-December); the change in reporting schedule excluded the Winooski target numbers from 2013's annual report. Participation in 2013 was weakest in Williston, Winooski, and Essex. CCST will focus outreach efforts in those 3 towns in 2014.

Hands-On Project Participation (Event Driven Tasks)											
Activity	Location	Participant Town									Total
		Burlington	South Burlington	Essex	Essex Jct	Milton	Shelburne	Williston	Winooski	Other/ Unkown	
Lamoille River Walk Clean-Up (MYC and MCC)	Milton	1	0	0	0	9	0	0	0	0	10
S. Burl. Library Rain Garden Installation	South Burlington	0	39	0	0	0	0	0	0	0	39
Water Quality Monitoring	Multiple	6	2	0	3	1	0	2	0	3	17
Water Quality Monitoring Training Event	Williston	6	2	0	3	1	0	2	0	3	17
Long Meadow Flow Monitoring	Shelburne	0	0	0	0	0	1	0	0	0	1
Chamberlain School Rain Garden III Installation	South Burlington	0	35	0	0	0	0	0	0	0	35
Lamoille River Clean Up (Boy Scouts)	Milton	0	0	0	0	7	0	0	0	0	7
McCabe Brook Clean-Up	Shelburne	0	0	0	0	0	21	0	0	0	21
Adopt-A-Rain Garden Maintenance Days	Multiple	2	4	0	3	0	0	1	0	0	10
	<b>Total</b>	<b>15</b>	<b>82</b>	<b>0</b>	<b>9</b>	<b>18</b>	<b>22</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>157</b>



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Since participation numbers for Essex, Essex Junction, Williston, and Shelburne were low in 2012, these were the outreach target towns in 2013. Based on the table below, 2013 outreach efforts in these towns were a success. Hands-on events are planned for these 4 towns in 2014.

Outreach Activities Participation											
Activity	Location	Participant Town									Total
		Burlington	South Burlington	Essex	Essex Jct	Milton	Shelburne	Williston	Winooski	Other/ Unkown	
Facebook 'Likes'	N/A	29	4	0	1	0	3	1	3	42	83
Website Visits	N/A	265	36	16	0	2	19	27	14	422	801
e-news Mailing List	N/A	39	24	7	14	23	6	15	21	112	261
Burlington Kid's Day	Burlington	0	0	0	0	0	0	0	0	50	50
Milton Community Dinner	Milton	0	0	0	0	18	0	0	0	0	18
Connecting the Drops Concert Series *	Burlington	0	0	0	0	0	0	0	0	750	750
Essex Junction Block Party	Essex Junction	0	0	3	10	0	0	0	0	5	18
Shelburne Farmers' Market	Shelburne	1	0	0	0	0	15	1	0	6	23
Williston Farmers' Market	Williston	0	1	0	0	0	0	4	0	0	5
Essex Free Library	Essex	0	0	4	1	0	0	0	0	0	5
Shelburne Harvest Festival	Shelburne	8	2	0	2	0	19	0	0	12	43
Essex Heart and Soul Volunteer Fair	Essex	0	0	8	5	0	0	0	0	0	13
Essex Junction 5 Corners Farmers Market	Essex Junction	1	0	0	9	0	0	1	0	2	13
Essex Fire Station Open House	Essex	0	0	22	0	0	0	0	0	0	22
Educational Visit with Boy Scout Troop	Milton	0	0	0	0	12	0	0	0	0	12
<b>Total</b>		<b>343</b>	<b>67</b>	<b>60</b>	<b>42</b>	<b>55</b>	<b>62</b>	<b>49</b>	<b>38</b>	<b>1401</b>	<b>2117</b>

\*This number was estimated based on data provided by Church Street Marketplace, it is estimated that approximately 150 people visited the Connecting the Drops/CCST tables during each of the five concert events. We do not have demographic information regarding these numbers

Other Vermont towns that are not part of the Stream Team participate in Stream Team Activities. The chart below identifies towns with significant participation.

CCST Outreach and Event Participation Beyond Participating MS4 Towns							
	Town	Jericho	Richmond	Hinesburg	Charlotte	Colchester	Total
Facebook Likes	N/A	2	0	0	0	3	5
Website Activity	N/A	9	7	4	6	31	57
Mailing List Members	N/A	2	2	0	0	7	11
WQ Sampling Volunteers	Multiple	0	1	1	0		2
Outreach at Shelburne Harvest Festival	Shelburne	0	2	0	0		2
Outreach at Essex Jct 5 Corners Farmers Market	Essex Jct	0	0	0	0	1	1
<b>Total</b>		<b>13</b>	<b>12</b>	<b>5</b>	<b>6</b>	<b>42</b>	<b>78</b>



State of Vermont

Agency of Transportation

**Vermont Agency of Transportation (VTrans)  
Green Stormwater Infrastructure (GSI) Implementation Work Plan**

Effective July 1, 2013

by



VTrans Secretary Brian Searles

**I - INTRODUCTION**

Governor Shumlin, in March of 2012, signed an Executive Order which established an Interagency Green Stormwater Infrastructure (GSI) Council. The Council includes the Secretaries (or delegates) of the Agency of Natural Resources, Agency of Transportation, Agency of Commerce and Community Development, and the Commissioner of the Department of Buildings and General Services or their designees. The main responsibilities of the council include, but are not limited to:

- A. Identify opportunities for integrating GSI systems and practices into existing state programs.
- B. Develop technical guidance for implementation of GSI systems and practices.
- C. Establish a plan and timeframe for implementing GSI systems and practices associated with state properties and state constructed sites.
- D. Identify state liaisons to support GSI implementation within their agencies.
- E. Identify and undertake GSI research and monitoring studies.
- F. Identify on-going and sustainable funding sources to support regional planning, coordination, and implementation efforts.

In conjunction with the above, members of the Council are also responsible for the development of *Green Stormwater Infrastructure (GSI) Implementation Work Plans*. The purpose of the work plans is to highlight current initiatives, identify barriers and challenges to the implementation of GSI practices, and set a direction for the promotion and adoption of GSI in the years ahead. Note that these plans are a first step towards greater integration of GSI concepts into State processes and programs. A great deal of education, outreach, and discussion is needed before more specific and tactical work plans can be developed.

- A. Stormwater Runoff & Traditional Treatment Methods  
Stormwater runoff, caused by precipitation running off impervious surfaces, is a leading cause of surface water pollution in Vermont. Impervious surfaces generate hundreds of thousands of gallons of untreated runoff per year resulting in various negative effects to streambank stability, aquatic habitat, and infrastructure. Managing the quality and quantity of this runoff in a sustainable way is of utmost importance for the health of our communities and the protection of our natural resources.

The traditional approach to managing stormwater runoff is with "gray infrastructure," a network of pipes, storm drains, and concrete tanks where collected runoff is then discharged to receiving waters. Time has shown that this approach is very effective at conveying water but does little to mitigate volume and pollutant loads. In fact, this traditional method can cause, and has caused, additional issues downstream from end-of-pipe (outlet) structures.

B. Green Stormwater Infrastructure and its Benefits

An alternative approach is to use GSI, which relies on natural and semi-natural systems to infiltrate, treat, and store water in dispersed locations throughout the landscape. This decentralized approach deals with stormwater as close to the source as possible. Groundwater recharge, flow control, and filtration are all inherent features of GSI as it strives to manage stormwater and pollutants by restoring and maintaining the natural hydrology in a watershed and emphasizes infiltration. This approach reduces runoff and pollutant loading.

As a result, GSI has many benefits including reduced and delayed stormwater runoff volumes, enhanced groundwater recharge, stormwater pollutant reductions, flood mitigation, reduced sewer overflows, improved air quality, additional wildlife habitat and recreational space, improved human health, increased land values, and long term cost savings from reduced stormwater infrastructure operation and maintenance costs.

C. Green Stormwater Infrastructure and VTrans

VTrans has chosen to embrace the use of GSI as an effective means of mitigating and managing stormwater. VTrans is proud of its efforts put forth to date incorporating GSI into Agency projects and processes and recognizes that there are many challenges and opportunities ahead. The development of this GSI Work Plan has brought many of those challenges to light and sets a course for looking at a variety of ways to address them over the course of the coming years.

The outcome of this effort will have impacts on how VTrans goes about its business in project planning, scoping, design, construction, and operation & maintenance. The development of a VTrans GSI Implementation Work Plan has also allow VTrans to document work efforts, research, policies, practices, and strategies already in place that meet the intent of the GSI Executive Order.

Integrating GSI into Agency projects, transportation infrastructure and associated facilities statewide that VTrans owns and controls will be a multi-year effort. As a matter of perspective, VTrans owns or controls 2,702 miles of roadway; 62 District Maintenance Facilities; 9 State Airports; 24 Active Park & Rides (plus 4 inactive); 3 Gravel Pits; 14 Rail Yards (leased to 3<sup>rd</sup> party); and 2 Public Transit Facilities (leased to 3<sup>rd</sup> party).

## II - VTRANS LONG-TERM VISION FOR GSI

VTrans has successfully integrated GSI systems and practices into some of its existing programs (refer to "Past and Current VTrans GSI Initiatives" section). The long-term vision for VTrans is to develop a program that uses an adaptive management approach towards the integration and implementation of GSI systems and practices into its existing programs to the maximum extent practicable, given financial and resource constraints, barriers and challenges to GSI implementation, and to the extent that it does not interfere with VTrans' Mission.

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VTrans' Mission statement is...

*"To provide for the safe movement of people and goods in a reliable, cost effective and environmentally responsible manner."*

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VTrans will need to address how and to what extent GSI will be implemented across Agency functions. Although GSI is an important practice to have in the tool box, developing strategic policy recommendations and specific actions addressing the issues, barriers, questions, and opportunities put forth in this GSI Work Plan needs to be a balanced and fitting approach for the transportation sector. This effort will focus on identifying initiatives that promote transportation co-benefit opportunities such as flood resilience, regulatory relief, mitigation, and cost savings, and recognize strategies worthy of research and more analyses. Timing for considering integrating and implementing GSI systems and practices into VTrans operating systems, across all state property and into all projects, will vary depending upon the specific initiative. Progress will be reported annually.

### **III - PAST AND CURRENT VTRANS GSI INITIATIVES**

There are three (3) major Divisions within VTrans that are involved and influence how projects are planned, designed, constructed, and maintained. It is within these Divisions of the Agency that GSI is being practiced to varying degrees. Current Initiatives discussed in this GSI Work Plan are supported by federal or state funds tied to projects or operation and maintenance budgets. The level of funding from year to year is not reliable and thus neither will be the level of GSI implementation from one budget year to the next.

Past and current GSI initiatives by Program are listed below which will be updated annually to reflect current state of GSI practice at VTrans.

#### **A. Policy, Planning and Intermodal Division (PPAID)**

The Policy and Planning Section of PPAID is responsible for developing Agency policy, preparing the State Long Range Transportation Business Plan and the State Transportation Improvement Program; strategic, modal and corridor management plans; and for regional planning relationships and activities. PPAID also includes Aviation, Public Transit and Rail Sections.

##### **1. Aviation (9 State Airports), Public Transit (2 facilities) and Rail (14 facilities)**

Compliance under the NPDES Multi-Sector General Permit (MSGP) for Industrial Stormwater with site specific Stormwater Pollution Prevention Plan (SWPPP) for each state airport, rail and public transit facility considers the need for stormwater treatment practices including GSI. Some of these facilities are also subject to State Stormwater Discharge Permits which may have constructed GSI under that permit program.

##### **2. Rest Areas (15 sites) leased to third party (BGS)**

Rest Areas and Welcome Centers will be addressed by Buildings and General Services (BGS).

##### **3. Highway Stormwater Treatment Practice Research**

Linear Highway Stormwater Treatment Best Management Practice Research has been recently completed in 2012 looking at which types of GSI are better suited for the linear nature of the Transportation system. This information will be used to launch the development of a VTrans Highway Stormwater Design Manual and/or to augment/enhance the update of the Agency of Natural Resources Stormwater Design Manual.

#### **B. Program Development Division (PDD)**

This Division includes project design sections under Highway Safety & Design (Pavement Management, Roadway, and Structures), a Local Transportation Facilities Section, a Right-of Way Section (including

Highway Access Management), an Environmental/Hydraulics Section, a Construction Section, and a Materials & Research Section.

1. Project Scoping, Design Development and Construction

- a) Designers and plan reviewers are actively looking for opportunities to move towards GSI (i.e. pavement management projects and guardrail replacement projects....we are looking at removing timber curbing under guardrails to allow sheet flow over vegetated roadway side slopes and are actively looking for opportunities to eliminate closed drainage systems and promote surface sheet flow into vegetated areas along our projects).
- b) Other examples of GSI constructed on VTrans projects include:
  - 1) Using grass swales and disconnection along roads; disconnection of roof tops at airports; and infiltration swales within Interstate medians.
  - 2) Using rain gardens & rain barrels at Williston I-89 Welcome Centers.
  - 3) Park & Rides incorporating GSI (i.e. bioretention/infiltration at Ferrisburgh Park & Ride, gravel wetland at St. Albans Park & Ride, Waterbury Park & Ride infiltration trench, and porous pavement at Randolph Park & Ride).
  - 4) VTrans Construction Environmental Engineers monitor water quality permit compliance during construction activity and ensure appropriate erosion control practices are followed and vegetation is restored in a timely manner.

2. Right-of-Way & Highway Utilities & Permits

- a) Highway access management; "drain-on" control; and illegal connection/illicit discharge detection, elimination, and prohibition.
- b) Standard permit conditions for controlling type and volume of water entering right-of-way.
- c) Require outside right-of-way (ROW) treatment by an applicant seeking to discharge stormwater into our ROW such that there will be no increase over pre-construction flows to ROW.
- d) We are looking at holding onto our surplus land holdings where those parcels provide natural treatment of stormwater from transportation infrastructure.

3. Program Development Environmental & Hydraulics Review

- a) Scoping & Resource Identification – working with project designers to preserve natural systems (wetlands and river/lake buffers which provide stormwater treatment).
- b) Hydraulics Manual promotes adequate culvert and bridge sizing and stream equilibrium.
- c) VTrans Better Back Roads Program funds municipal water quality enhancements.
- d) VTrans Culvert and Ditching Procedure in place to offer guidance to contractors and District Maintenance Crews on proper temporary and permanent stormwater treatment controls.

4. Materials & Research

- a) Ongoing internal research, literature reviews, and stormwater treatment practice testing.
- b) Ongoing cooperative research with UVM Transportation Research Center on stormwater treatment practices (i.e. Porous Pavement Park and Ride in Randolph).

C. Operations Division (OPS)

The Agency of Transportation (VTrans) has a significant public investment in its transportation infrastructure. And it's the Operations Division (OPS) that must maintain that infrastructure for the benefit of the traveling public. The OPS Environmental Program is charged with administering compliance for the Agency under NPDES Clean Water Act and State Stormwater Permits in addition to promoting environmental stewardship in all our activities.

1. District Maintenance Facilities (62 sites) and Gravel Pits (3 sites)  
Site specific Stormwater Pollution Prevention Plans (SWPPPs) have been developed for 5 Maintenance Facilities and 3 Gravel Pit sites with plans to develop SWPPPs for the remaining 57 District Maintenance Facilities over a period of time. These SWPPPs look for and incorporate stormwater treatment practices and source control at these sites, some already including GSI. Some of these facilities are also subject to State Stormwater Discharge Permits which may have constructed GSI under this permit program.
  2. District Highway Operation and Maintenance Best Management Practices  
Maintenance Activities have and will continue to be assessed to look for opportunities to incorporate GSI to the maximum extent practicable into daily operation and maintenance activities. Most of the maintenance activities that are compatible with GSI practices and philosophy are covered under Best Management Practice Guidance Documents, some of which are already in place and include:
    - a) Vegetation Management  
(Mowing, Tree, Brush, Invasive Species Management and Riparian Protection)
    - b) Bridge Washing & Vehicle Washing
    - c) Snow and Ice Control
  3. Town Grant Programs  
Codes and Standards have been developed under Act 110 that promotes municipal road maintenance standards benefitting water quality, some of which are GSI.
- D. Inter-Agency Communication, Policy, and Other Programmatic Strategies Involving GSI  
There are various other initiatives underway that embrace GSI and have been used meet the intent of the GSI Executive Order. These include:
1. Inter-Agency Communication Protocol, Post Construction Stormwater Protocol, and Local Transportation Facilities Stormwater Protocol allow for meaningful opportunities to influence project design with a specific emphasis on stormwater treatment.
  2. Environmental Ethic Policy.
  3. Partnerships focused on water quality enhancements.
  4. VTrans representation on GSI Council and GSI Roundtable.

#### **IV - BARRIERS AND CHALLENGES TO WIDESPREAD UTILIZATION OF GSI**

Barriers and challenges are an expected part of any new initiative and change is particularly difficult in a large State Agency such as VTrans. We have identified some of the barriers and challenges under a number of categories listed below. The Agency hopes to gain better insight into how and if barriers can be overcome and challenges turned into opportunities. A better understanding of how GSI is relevant to VTrans from a functional perspective including planning, design, and maintenance could help move GSI further along in the Agency.

##### **A. Physical Barriers**

1. Site infeasibility and right-of-way space limitations.
2. Soil suitability for infiltration.
3. Proximity to high ground water, steep slopes, floodplains, wetlands and waterways; contaminated soils; underground utilities; Meteorological conditions.

B. Technical Barriers

1. Design and safety standards for highways (FHWA) and for Airports (FAA).
2. Inconsistent messages on the greater meaning of GSI and limited technical guidance.
3. Unknown life cycle costs and lack of understanding about what GSI will cost to design, construct, operate, maintain and replace in comparison to conventional stormwater treatment approaches.
4. Unknown risks and lack of long-term performance data.
5. Local, State, and Federal code and regulation limitations.

C. Institutional Barriers

1. Risk and liability issues.
2. Stormwater has been and sometimes still is an afterthought in project design.
3. Lack of ability of VTrans to timely alter its procedures, standards, and specifications.
4. Lack of education and training at all levels.
5. Competing Agency missions – environmental priorities challenge other Agency priorities (i.e. safety).
6. Competing interests for funding – environmental mitigation competing with other Agency priorities.
7. Leased land (Rail and Public Transit) and municipally managed projects.
8. VTrans Policy regarding Road to Affordability Priorities.

D. Financial and Resource Barriers

1. Competing interests for limited funding and mounting demands calling for more resources.
2. Perceived and real costs and lack of investment in research.
3. Lack of financial support to operate and maintain stormwater infrastructure.

## V - SHORT-TERM OPPORTUNITIES AND STRATEGIES

VTrans' short-term strategy is to continue and enhance what it has done to date to incorporate GSI practices and systems into Agency Programs. We have identified a VTrans GSI Liaison to coordinate and track all internal GSI efforts and to sit on the Joint State Agency GSI Council as the Agency's sole representative. This Liaison will develop an internal GSI Team representing each relevant program in VTrans that, over the coming years, will:

- A. Develop strategic policy recommendations and specific actions addressing the issues, barriers, questions, and opportunities put forth in this GSI Work Plan.
- B. Implement GSI Work Plan and prepare annual reports addressing accomplishments and challenges in that year and opportunities and strategies moving forward in the coming year.
- C. Work with ANR to identify training opportunities for VTrans staff.
- D. Support research and monitoring of new and innovative technologies.
- E. Support GSI initiatives at the local level (town road crews).
- F. Support development of technical guidance and standards.
- G. Review Better Back Roads Program for applicability of GSI components.

It is important to remember that the purpose of the GSI Work Plan is to highlight current initiatives, identify barriers, challenges, and opportunities to the implementation of GSI, and set a direction for the promotion and adoption of GSI in the years ahead. Note that this plan is the first step towards greater integration of GSI concepts into State Transportation processes, programs, and projects.

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**Primary Contact and VTrans GSI Team "Liaison"**

**Craig DiGiammarino, Operations Environmental Program Manager, Vermont Agency of Transportation**

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January 2, 2014

Ms. Christy Witters  
Vermont DEC  
Watershed Management Division  
1 National Life Drive  
Montpelier, VT 05620-3522

Dear Ms. Witters

The Chittenden County MS4's will cooperatively pursue a MS4 flow monitoring program in compliance with NPDES General Permit 3-9014 section IV.C.1.(e)(7). Participating communities include Burlington, Colchester, Essex, Essex Junction, Milton, Shelburne, South Burlington, Williston, Winooski, Burlington International Airport, University of Vermont and Vermont Agency of Transportation.

This cooperative effort is for the following streams:  
Allen Brook (Williston), Bartlett Brook (South Burlington), Centennial Brook (South Burlington), Englesby Brook (Burlington), Indian Brook (Essex / Essex Jet.), Morehouse Brook (Winooski), Munroe Brook (Shelburne), Potash Brook (South Burlington) and Sunderland Brook (Colchester / Essex /Essex Junction)

Compliance will be gained by flow and precipitation monitoring in one of three ways:

1. Work directly with the Agency of Natural Resources for flow monitoring compliance paid for in a fee simple manner.
2. Contract with United States Geological Survey (USGS) to install, maintain, and collect data and report for all flow monitoring stations according to the timeline attached (Attachment A).
3. Work with Chittenden County Regional Planning (CCRPC) as lead agency to oversee contract to install, maintain, and collect data and report for all flow monitoring stations according to the timeline attached (Attachment A).

ANR approval of this proposed plan may require modification of our approved MS4 Stormwater Management Plan.

Additionally, VTrans will cost share in the operation and maintenance of gages in the Stevens, Rugg, and Moon Brooks with the appropriate municipalities upon establishment of those monitoring programs by the municipalities.

Sincerely,



Jennifer Callahan

Operations Environmental Stormwater Technician

Attachment A

Stormwater Impaired Waters Flow Monitoring Plan Timeline

- January 2, 2014 – The Vermont MS4 communities (hereafter referred to as “the MS4s”) submit a schedule to the Vermont ANR that describes how stream flow monitoring requirements found in the MS4 permit will be met. In order to achieve consistency of results, cost savings, and efficiency in management of the new Stream Flow Monitoring Program (SFMP), the MS4’s will work collaboratively to create and implement a single SFMP consistent with requirements found in the approved MS4 permit.
- March 2014 – Vermont ANR approves the SFMP prepared by the MS4s.
- April – June 2014 – The MS4’s create an MOU that specifies cost sharing and project management for the SFMP. The MS4’s create a scope of work that defines the role and responsibilities of the program manager who will oversee stream monitoring efforts. The MS4s create a scope of work for the contractor who will complete stream monitoring activities and report to the program manager.
- July – August 2014 – The MS4’s release an RFP or otherwise take steps to retain a Program Manager for the SFMP. The MS4’s release an RFP to obtain a contractor who would implement the SFMP.
- September - December 2014 – Municipalities will be working on their FY16 budgets (July 1, 2015 through June 30, 2016) and will include funding for stream flow monitoring based on costs received through the previous RFP process.
- February 2015 – April 2015– Municipal budgets, including funding for the SFMP, are approved for FY16.
- July 2015 – March 2016 – The program manager and contractor begin work on the SFMP. This includes purchasing equipment, establishing data collection sites, collecting stream cross section data, and performing other tasks as necessary to ensure that successful stream flow monitoring data will be generated starting in the Spring of 2016. The MS4s will hold quarterly meetings to review the progress of the SFMP with the Program Manager.
- April -May 2016 – Installation of stream flow monitoring equipment and collection of stream flow data begins in stormwater impaired streams in Chittenden County.