

Stormwater Treatment Project Implementation in the LaPlatte River Corridor Hinesburg, Vermont

The Lewis Creek Association (LCA) is requesting funding for two stormwater treatment projects to address water quality and to specifically reduce sediment and nutrient inputs from unregulated non-point sources to Lake Champlain. These projects were each recommended in previously completed ERP-supported projects in the LaPlatte River watershed that accomplished stormwater system mapping, identification of untreated stormwater runoff from developed areas, coordination with the Town to identify problem areas, and identification of feasibility of treatment implementation. These stormwater treatment projects are expected to address LaPlatte River Corridor stressors identified in the State's Surface Water Management Strategy including flow alteration and nutrient loading. The Town has provided a letter of support to the LCA.

The Town of Hinesburg has been actively working to address water quality issues and local flood resilience in its Town Plan, Zoning Bylaws and through water quality monitoring. The 2011 Town Plan references the 2010 LaPlatte River Watershed Stormwater Infrastructure Study that recognizes the need to develop more comprehensive stormwater management especially for the village growth area along with establishing goals (4.3.1) that include requirement of vegetative buffers and erosion control along rivers, streams and lakes. Zoning regulations include the adoption of Fluvial Erosion Hazard Areas Section 6.7 that restricts most development from floodprone areas. The Town also makes financial support to the water quality monitoring efforts of Lewis Creek Association and the Lake Iroquois Association who work with the Department of Environmental Conservation to identify surface water quality improvement locations for Lewis Creek, LaPlatte River and Lake Iroquois.

The LaPlatte River Watershed Stormwater Infrastructure Study analyzed stormwater impacts on the LaPlatte River and tributaries including stormwater infrastructure mapping and identification of stormwater mitigation projects (CC 2009-RCG-3-04). Stormwater planning in Hinesburg was advanced with detailed hydrology modeling of the Town provided in part with funding from a Municipal Planning Grant awarded by the Vermont Department of Economic, Housing and Community Development. Existing conditions and a buildout scenario stormwater runoff conditions were simulated using hydrology modeling for the LaPlatte River Watershed with special focus on the Village Growth Area. These stormwater master planning efforts have identified multiple high priority stormwater project locations. Two of these projects have been selected for advancement as part of this grant. Project tasks are summarized below, detailed subtasks and performance measures are presented on the next page.

In the 2009 Tactical Basin Plan for Basin 5, specific strategies funded by the Ecosystem Restoration Program to implement the Lake TMDL include reducing phosphorus concentrations through river corridor improvements and stormwater runoff abatement. The Plan further explains the public's desire to maximize efficiency of efforts to reduce phosphorus loading by funding the development of phosphorus loading estimates and the reductions expected from various management activities in the LaPlatte watershed (Agency of Natural Resources, Water Quality Management Plan for the Northern Lake Champlain Direct Drainages, pg 67, 68). These proposed ERP 2014 projects are the resulting priority areas in the LaPlatte watershed selected for strategic phosphorus and sediment reduction.

The VTDEC Watershed Coordinator Karen Bates and Jim Pease have assisted with these previous ERP funded reports and will be available to attend steering committee meetings in 2014/15.

A. Route 116 and Silver Street Raingarden Implementation Project, Hinesburg, VT (Phase II: Project Implementation)

Hydrology modeling identified that the subwatershed containing the intersection of Route 116 and Silver Street generate a large runoff volume due to large amount of impervious cover and limited storage and infiltration (Figure 1). A conceptual design and preliminary budget for a tiered raingarden was developed on Town-owned land at the corner of Route 116 and Silver Street, a high priority area also identified in the initial stormwater infrastructure project (Figure 2). Additional work is necessary to complete the design to fit the design within the existing infrastructure, utilities, and planned sidewalk project. Detailed elevation and utility information is required for final design. Hydrology modeling and calculations indicate that the raingarden would result in the removal of 87% of the total suspended solids and 34% of the Total Phosphorus from the water quality volume in the drainage. The LCA is requesting funds to cover the additional data collection, engineering final design, construction oversight, and construction. The Town of Hinesburg will provide excavation labor and equipment and ongoing maintenance of the stormwater treatment system.

B. Patrick Brook Stormwater Treatment Feasibility and Preliminary Design (Phase 1: Project Feasibility Analysis)

In both the stormwater infrastructure and hydrology projects mentioned above, several of the Patrick Brook subwatersheds were identified as having degraded geomorphic condition and a high priority for stormwater mitigation. One potential treatment location was identified next to Mechanicsville Road at the base of the cemetery (Figure 3). A detention area at this location could serve as channel overflow during storm events and detain runoff from the cemetery hillside. The location of this detention area is upstream of stream geomorphic segment T4.02 that has poor geomorphic condition and T4.01 which has significant impervious surface and is therefore vulnerable to stormwater runoff. This site was visited in the field and appears to be a good location for a constructed wetland. Funding is requested for project development including data collection, an alternatives analysis of possible stormwater treatment options, preliminary engineering design, and development of a preliminary cost opinion.

Performance Measures and Associated Payments

Performance Measures and Outcome	Deliverable	Schedule	Payment
Project Tasks Associated with A: Route 116 and Silver Street Raingarden			
1. Project initiation	Signed Grant agreement and copy of press release	August 2013	\$ 600
2. Data collection, survey, update existing conditions plan	Survey Data. Revised Existing Conditions Plan.	September - December 2013	\$ 2,900
3. Prepare preliminary Design for review by project team and public.	Preliminary design plans (pdf of 11x 17 planset)	January-March 2014	\$ 4,500
4. Review and incorporate edits from design reviews. Prepare an engineer's probable cost estimate and proposed construction sequence.	Final Design plans (pdf and 3 hard copies of 11 x 17 inch planset) Engineers cost estimate	March-April 2013	\$ 2,200
5. Construction of project.	Construction oversight reports. Photos of construction and finished raingarden.	May - August 2014	\$ 50,500
6. Prepare summary report of project.	Final report (pdf and 3 hard copies).	September 2014	\$ 900
Project Tasks Associated with B: Patrick Brook Stormwater Project			
7. Project initiation	Signed Grant agreement and copy of press release	August 2013	\$ 500
8. Data collection, meeting with Town, survey, create existing conditions plan	Survey Data. Existing Conditions Plan.	September - December 2013	\$ 2,000
9. Prepare preliminary design for review by project team and public.	Preliminary design plans (pdf of 11x 17 planset)	December 2013-March 2014	\$ 2,500
10. Meeting with Town to present results and recommendations	Meeting notes. Summary of next steps.	May 2014	\$ 500
11. Prepare summary report of project.	Final report (pdf and 3 hard copies).	September 2014	\$ 500
TOTAL			\$ 67,600

Itemized Budget

	LCA	MMI	MMI	MMI	Contractor/	Task	
Project Task	Marty	Roy	Jessica	Ryan	Materials	Fee	Round
<u>A: Route 116 and Silver Street Raingarden</u>							
Execute Contract / Press Release	4.5	2				\$488	
Survey / Update Existing Conditions Plan			16	8		\$2,480	
Data Collection			2	2		\$400	
Stormwater Flow Calculations		1	4			\$560	
Preliminary Design		4	16			\$2,240	
Meeting with Town	2	2	4			\$790	
Public Meeting	4	2	4			\$900	
Final Design / Cost Opinion		4	16			\$2,240	
Construction Oversight (4 trips, 4 hours)		4	16			\$2,240	
Town In-Kind Construction Labor/ Equipment					\$ 9,100	-	
Prepare Task Summary Report	2	1	5			\$780	
Labor Sub-Total	13	20	83	10		\$13,118	\$13,100
Construction Materials/ Plants Estimate					\$ 48,300	\$48,300	\$48,300
Project Total						\$61,418	
<u>B: Patrick Brook Stormwater Project</u>							
Execute Contract / Press Release	2	2				\$350	
Project Team Meeting with Town	2	2	2			\$570	
Survey/ Create Existing Conditions Plan			16	8		\$1,760	
Data Collection			2	2		\$220	
Preliminary Design / Cost Opinion		2	14	2		\$1,780	
Meeting with Town	2	2	2			\$570	
Prepare Task Summary Report	2	1	3			\$560	
Sub-Total	8	9	39	12		\$5,810	\$5,800
<u>Expenses</u>							
LCA Overhead						\$150	
Travel						\$150	
Printing						\$100	
Sub-Total						\$400	\$400
TOTAL HOURS	21	29	122	22	n/a		\$67,600
CONTRACTED	\$1,128	\$3,480	\$13,420	\$1,980			

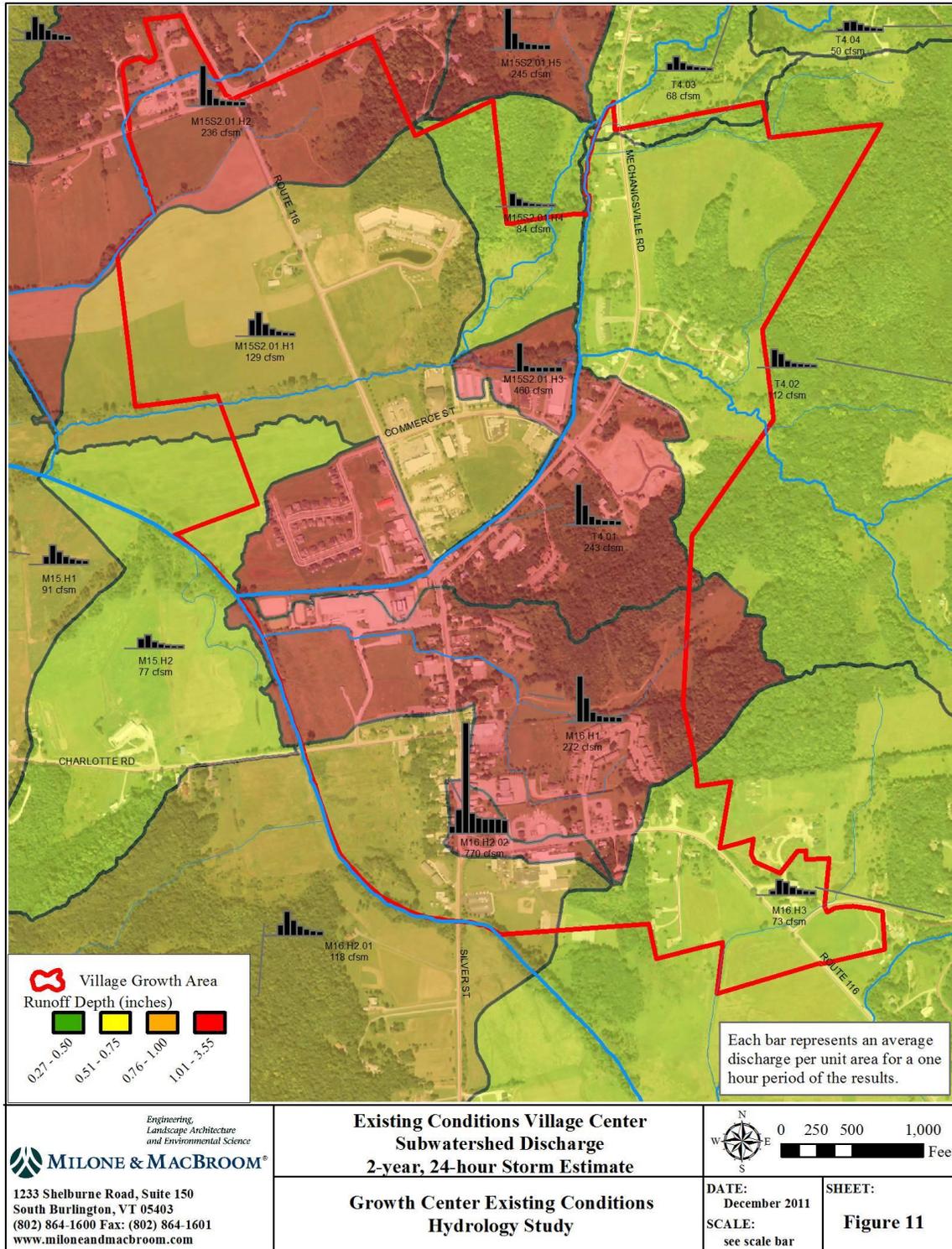


Figure 1: The proposed Route 116 and Silver Street raingarden project is located under the hydrograph labeled “M16.H2.02”. These results are presented in the Growth Center Existing Conditions Hydrology Study, prepared for the Town of Hinesburg, Vermont, dated January 2012.

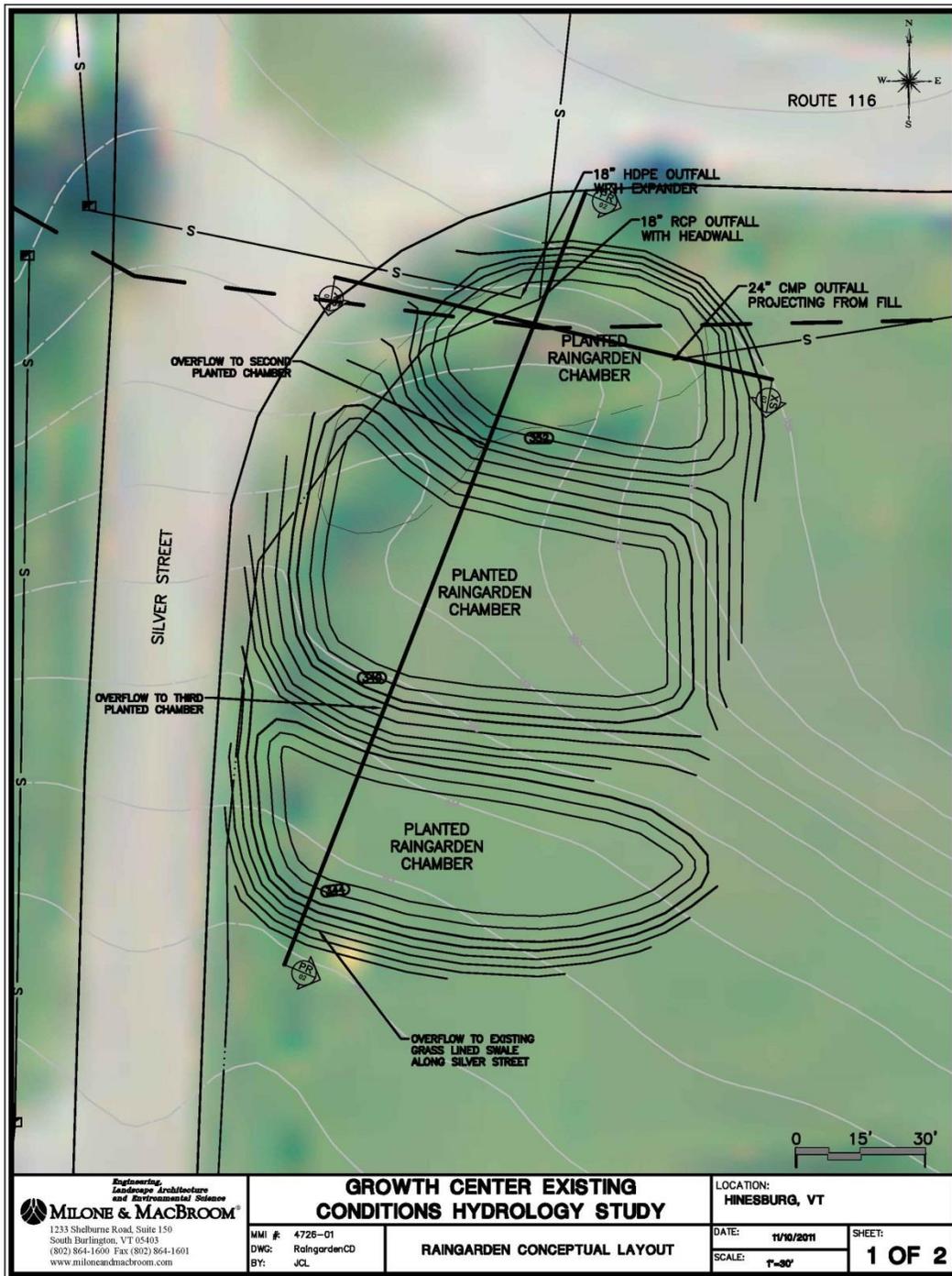


Figure 2: Route 116 and Silver Street Rain Garden Project Conceptual Design location and layout.

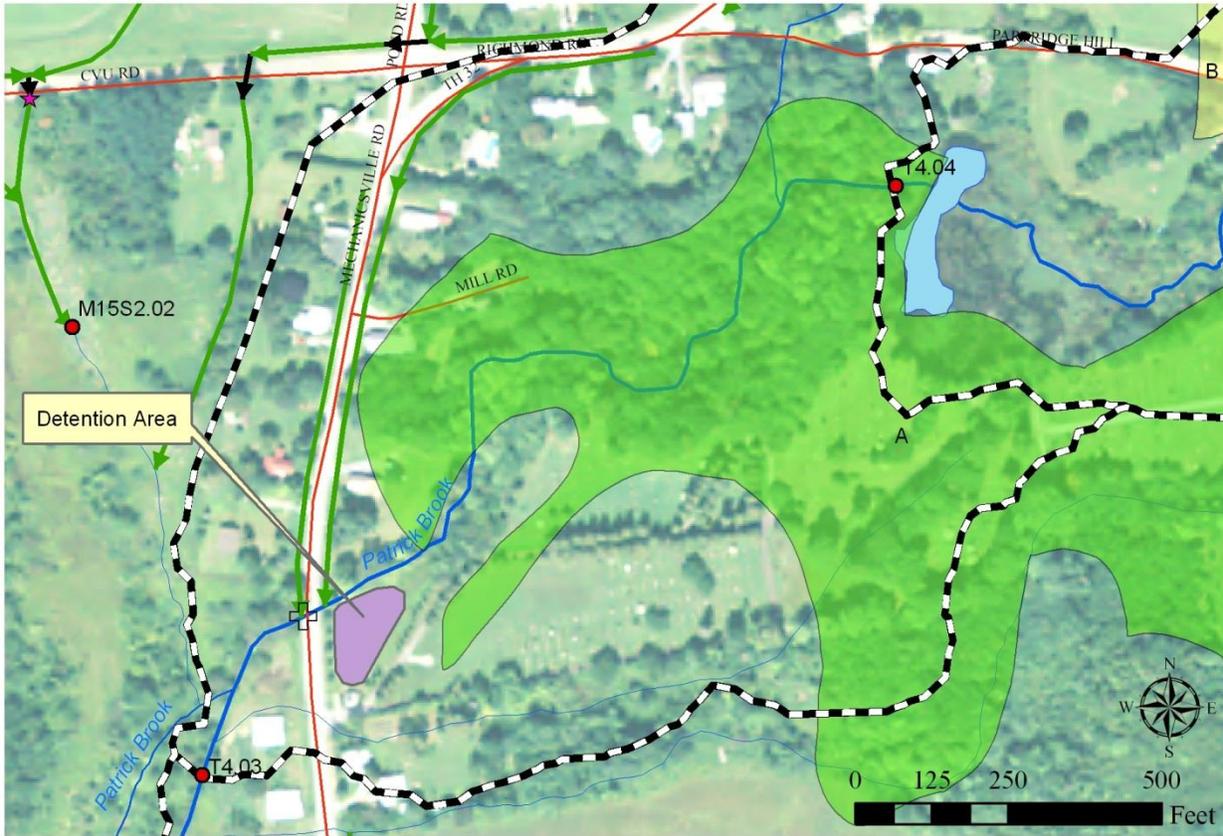


Figure 3: Patrick Brook stormwater treatment facility possible location on Town-owned land at the base of the cemetery adjacent to Mechanicsville Road, Hinesburg, VT.