VTDEC has been forming watershed partnerships for many years.
Examples with PHASE 2 Municipalities

• Regional Stormwater Education Program (RSEP) Chittenden County – 12 MS4s

• Vermont Youth Conservation Corp – 7 Burlington Watershed Crews 1996-2002
CHITTENDEN COUNTY REGIONAL STORMWATER EDUCATION PROGRAM (RSEP)

- Developed radio/TV/internet outreach plan with consultant
- Annual spring & fall media campaign
- Assessed public behavior change over 5 year permit cycle
- 12 MS4 partners
- Total project cost: $300,000
BURLINGTON VYCC WATERSHED CREWS

- 3 watershed litter and debris clean-ups
- 11 stream bank bioengineering & buffer projects
- 5 erosion control projects
- 3 animal exclusion projects (fencing, baffles)
- 3 stormwater structure maintenance projects
- 4 storm drain stenciling projects
- 14 partners, Total project cost: $19,041
Examples with large Landowners in Phase 2 Communities

- Allen Brook stream buffer, ST Griswold Corporation, Williston

- Bartlett Brook stormwater and stream channel project, Shearer Chevrolet, South Burlington
ST GRISWOLD CORPORATION

• 30 acres of wetlands created
• 1400 trees planted
• 2700 feet (13 acres) of riparian buffer
• 1500 feet of stream bank bioengineering
• Total project cost: $5000
• 1.2 acre constructed stormwater wetland
• 350 foot stream channel & nongame fishery habitat restoration

SHEARER CHEVROLET
• 11 partners
• Total project cost: $266,100
PROS

• Leverages funds/in-kind services/land and material donations.
• “Snowball” effect of acquiring grants.
• Popular with the media “working together”.
• Accomplishing a shared goal, i.e. protection of a natural resource, beach, or improvement & protection of municipal resources such as infrastructure.
• “Many hands make for light work.”
• Partnerships can solve each partners problems, i.e. business needs municipal approval to expand, municipality needs assistance in solving problem.
CONS

• Complicated project management & logistics.
• To be successful requires a dedicated person or persons as a Municipal Project Manager or Coordinator.
• Requires close coordination with all Municipal Boards.
• “Multiplier effect” for grant administration, accounting & financial oversight.
• Volunteers are not always dependable.
• Not always sustainable since partnerships are often initiated from the top down because of a mandate or legal requirement. Need “buy-in” from the community.
Rewarding Partners

• Governor’s award for environmental excellence

• EPA awards – drinking water partnerships, environmental merit awards

• Publicity in newspapers, TV, Web Sites - very important to business, essentially free advertising

• Volunteer recognition awards
South Burlington
City to unveil brook cleanup plan

By Lindsay O'Neil

The City of South Burlington in partnership with the Champlain Water District and the Agency of Natural Resources has acquired funding to construct a stormwater treatment system to protect Bartlett Brook, Shelburne Brook, and Shelburne Bay from water quality degradation caused by runoff from a portion of Shelburne Road. Construction is expected to begin in 2001. The stormwater treatment system will be constructed in the fall of 2001 and is expected to be completed by the end of the year. The system will treat the runoff from Shelburne Road and reduce the nutrient and sediment loadings to Bartlett Brook and Shelburne Bay. The system will be designed to protect the brook from nutrient pollution and to enhance the fish habitat.

Bartlett Bay Stormwater Treatment System to Be Constructed in 2001

The City of South Burlington, in partnership with the Champlain Water District, has acquired funding to construct a stormwater treatment system to protect Bartlett Brook, Shelburne Brook, and Shelburne Bay from water quality degradation caused by runoff from a portion of Shelburne Road. Construction is expected to begin in 2001. The stormwater treatment system will be constructed in the fall of 2001 and is expected to be completed by the end of the year. The system will treat the runoff from Shelburne Road and reduce the nutrient and sediment loadings to Bartlett Brook and Shelburne Bay. The system will be designed to protect the brook from nutrient pollution and to enhance the fish habitat.

Champlain Water District
Water Quality 2002

The Other Paper September 15, 2000

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An Example of a Bottom-up Partnership: Initiated by a Town

Morristown, Vermont
1962-LAKE LAMOILLE

2006-LAKE LAMOILLE
Wilkins Ravine Chronology

January 1988 – First complaints about erosion and property damage. Planning Commission recognizes threat to RR culvert. No comprehensive action taken but PC starts reviews of future development on a case by case basis.

June 1989 - VTrans hazmat investigation of ravine for proposed new bypass discovers decomposed 50 gallon drums, automobiles and other debris in the ravine.

July 1998 - VTrans upgrades upstream culvert due to runoff surcharging. Downstream erosion increases dramatically after upgrade; private sewer line undermined.
Wilkins Ravine Chronology

March 2000 – State Environmental Board denies new building adjacent to ravine. Decision based on F&W Dept. concerns that increasing erosion and siltation would threaten the rainbow and brown trout fishery population and habitat below Lake Lamoille.

November 2001 - Town contacts state and NRCS and requests assistance. Town allocates $28,000 for problem.

June 2002 - Heavy rains-runoff cause major failure of RR culvert-embankment resulting in significant erosion into lake; total monthly rainfall 8.04".
Estimated Annual Sediment Loading to the Lamoille River:

(1) Channel erosion – 90 tons/year
(2) Stormwater runoff – 20 tons/year
(3) June 12, 2002 event - unknown
WILKINS RAVINE OUTFALL TO LAKE LAMOILLE-2003
Wilkins Ravine Chronology
(Post embankment failure)

July 2002 – Town organizes informational meeting with landowners and businesses in North End Commercial District.

January 2003 – VTDEC provides staff assistance thru EPA 104(b)3 funding. Staff with NRCS assistance conduct survey and develop watershed remediation plan.
Town Concerns About North-end Commercial District

- Environmental Board decision could influence future development patterns in regional growth center and proposed truck bypass could be delayed.

- 2001 growth feasibility study: “There is inadequate existing drainage infrastructure... development options might be limited.”

- 2003 Town Plan: “wastewater and stormwater infrastructure issues continue to hamper economic development in the entire north end.”
The Wilkins Ravine plan involves a three-prong approach with 12 specific tasks.

- Stabilize and clean up the Wilkins Ravine area.
- Install stormwater quality treatment controls and, where possible, quantity treatment controls in the developed area drainage network upstream of the Ravine.
- Reduce the overall volume of stormwater discharging to the Ravine by retaining water on-site and infiltrating to groundwater as much clean runoff as possible.

(In this way the Town can achieve a sustainable drainage system and avoid the endless cycle of increasing infrastructure size.)
### TR-55 Watershed Analysis

<table>
<thead>
<tr>
<th>Landuse %ISA</th>
<th>2yr</th>
<th>10yr</th>
<th>25yr</th>
<th>100yr</th>
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</thead>
<tbody>
<tr>
<td>Exist. Cond.</td>
<td>28%</td>
<td>30 cfs</td>
<td>62 cfs</td>
<td>82 cfs</td>
</tr>
<tr>
<td>Future Cond.</td>
<td>48%</td>
<td>66 cfs</td>
<td>126 cfs</td>
<td>166 cfs</td>
</tr>
</tbody>
</table>

Old culvert can convey 43 cfs, < 10 yr  
New culvert can convey 193 cfs, < 100 yr
Watershed Partnerships
TOWN-STATE

(1) State renew/inspect all expired stormwater permits ✓

(2) State require new development/redevelopment to be subject to 2002 stormwater design standards including bypass ✓

(3) Town Adopt Section 638 in Zoning

“Conditional uses that create new impervious cover.. that are not subject to a state stormwater permit (<1 acre impervious) will be subject to the following requirements: ..treatment by infiltration of stormwater runoff from all new rooftop impervious surfaces to suitable soils shall be maximized for all land uses… ..treatment practices used should be sized to handle at a minimum the first .4” of runoff from the rooftop impervious surface(s)” ✓
VTRANS-owns failed RR embankment, and needs to work with Town on bypass right-of-way.
TOWN-VTRANS

TOWN-willing to work with VTRANS on bypass but they must fix embankment.
DEMARS PROPERTIES- has property erosion from North End runoff. TOWN will correct erosion, owner will stop debris dumping.
TOWN-DEMARS PROPERTIES
DEMARS PROPERTIES will provide easements for Sw-treatment structures. TOWN will construct.
MORRISVILLE PLAZA-owner wants local permits for redevelopment of vacant shopping center. TOWN-will permit redevelopment and build SW-treatment structures but owner will provide an easement.
COUNTRY HOME CENTER-failing septic, flooding, LP tanks in drainage way. TOWN permits sewer hook-up and pays for SW-treatment structures, owner installs with drainage improvements.
Watershed Plan Budget

VTrans 2005 Enhancement Grant--------$82,700 (47%)
District 6 Maintenance funds------$128,569
Morristown Local funds and in-kind-------$141,023 (30%)
VTDEC/EPA 2003-6 104b & 319
  CWA Grants----$91,053 (20%)
Foundation Grants----------------------$12,000 (3%)
  Total       $455,345
Project Partners

Forcier Aldrich & Associates, Lamoille CSWD, Morrisville Water and Light, Hannaford Brothers, Country Home Center/Goss Tire, Menard’s Agway, Pete’s Repair, Demars Properties, Murphy Realty Inc., TD BankNorth, Manosh Corporation, ST Griswold Corporation, Lamoille NRCD and Nature Center, Philip and Phyllis Houle, Anthony and Joan DeBenedetto, Johnson State College Upward Bound, Vermont Youth Conservation Corps, University of Vermont Plant & Soil Science Department, USDA-NRCS.