South Burlington, Vermont

- Population: ~18,000
- Area: 16.6 mi²
- Public Roadway: ~95 Miles
- Major Features:
  - Airport
  - Interstate
  - University Mall
  - University of Vermont
- Stormwater Infrastructure:
  - 5,775 Catch Basins (3,000 public)
  - 102 Miles of Pipe (57 miles public)
  - ~250 Culverts
What is a Stormwater Utility?

- Performs a set of defined municipal services and activities, related directly to stormwater management.

- Collects a fee for these defined services, established by municipal Ordinance, with the fee based on the relationship of the users to the defined services and activities.
South Burlington Stormwater Utility Development Timeline

- Stormwater utility feasibility study – December 2003
- Public outreach and utility development – 2003 to 2005
- City sewer ordinance updated to include stormwater and establish a stormwater fee - March 2005
- First stormwater fees assessed - April 2005 (billed in July)
- Stormwater superintendent hired - May 2005
- City council resolution establishing requirements for City take over of residential stormwater treatment systems – August 2006
Establishing the SW Utility was a Public Process

• Stakeholder involvement
  – Public Meetings – Held multiple meetings. Some specific to certain groups (e.g. businesses)
  – Established a 12 person advisory committee
  – Mailed information to individual business and property owners. Held individual meetings as requested.
  – Newspaper articles – Educate the public. Define what you’re doing before others do.

• Get help!
  – South Burlington worked with two consulting firms

Hoyle, Tanner & Associates, Inc.  amec
Stormwater Utility Development Costs

- Stormwater Utility Feasibility Study - $70,000
- Development and Implementation of Stormwater Utility ~$330,000
  - Included five policy papers, a cost of services study, a credit manual, ordinance development, and public outreach
- The City took a loan to pay for this work. Created a line item in the stormwater utility budget to pay back loan.
Why Do We Need a Stormwater Utility?

• Establish a need.
  – Water quality issues.
  – Show deteriorating infrastructure and/or provide examples of projects that need to be completed.
  – Discuss new/costly regulations.

• Define the benefits.
  – Improved water quality.
  – Staff to manage/oversee stormwater projects.
  – Dedicated funding for stormwater issues. Can leverage other sources
  – Remove burden of SW management from the DPW budget.

• Other issues specific to your area. South Burlington examples:
Damaged Catch Basin – Structure has shifted resulting in cracking and formation of sinkhole

Stormwater pipe filled with sediment.
Pipe Damage
Routine Maintenance

City staff cleaned 633 storm drains in 2010.

All curbed streets in South Burlington are swept at least twice a year. Main roads are swept more often.
Poorly Maintained Stormwater Treatment Systems

- If not properly maintained, stormwater ponds can deteriorate and will no longer effectively treat stormwater runoff.

Stormwater pond was not maintained and is now a source of sediment.
Flooding

• Some areas of the City experience regular flooding.
• This flooding can result from undersized or failing infrastructure, poor planning, or inadequate upstream control of stormwater runoff.
Stormwater Impaired Streams

- Five different stormwater impaired watersheds can be found in South Burlington.
- Approximately 61% of the land area in South Burlington is in a stormwater impaired watershed.
Stormwater Impaired Streams

- Sediment from in-stream erosion and wash-off can lead to impaired streams.

- Stormwater TMDLs are approved. New Vermont MS4 permit will require implementation within a 10 year timeframe.
State Stormwater Permits

- South Burlington has 141 State stormwater permits*.  
  - 98 of these permits are expired.
- There is currently no legal mechanism to renew an expired state stormwater permit in a stormwater impaired watershed.  
  - This can result in a clouded title and frustrate real estate transactions.
- The Vermont Agency of Natural Resources will be releasing new regulations related to stormwater runoff in stormwater impaired watersheds.  
  - This new permit will require stormwater improvements throughout the impaired watersheds.

* Permit numbers from 2005
Why is Treating Stormwater Important?

- Anything that enters the stormwater system is discharged untreated into the waterways we use for swimming, fishing, and providing drinking water.

What flows into here... ... ends up here!
South Burlington Takes Action!

- In order to deal with the increasing number of issues related to stormwater, the City of South Burlington created Vermont’s first Stormwater Utility.
Stormwater Utility Organizational Structure

- **South Burlington City Council**
  - City Manager
    - Police
    - Fire
    - Planning
    - Public Works
    - Wastewater
      - Highway
      - **South Burlington Stormwater Utility**
      - Parks
Stormwater Utility Staff

City Manager

City Engineer

Planning Director

Director of Public Works

Stormwater Superintendent

GIS Technician

SW Foreman

SW Equipment Operator

SW Truck Driver

SW Laborer
How is the Utility Funded?

• The Utility is funded on a user fee basis, similar to an electric, sewer, or water utility.
• The more stormwater you generate, the larger your fee.

Water, Electric, and Sewer Use
Total Area by Existing Land Uses

- Residential: 24%
- Non-Taxable: 22%
- Commercial: 22%
- Mixed Use*: 26%
- Other: 6%

Impervious Area by Existing Land Uses

- Residential: 17%
- Commercial: 43%
- Non-Taxable: 29%
- Other: 4%
- Mixed Use: 7%

*Mixed Use includes farm, open space, misc.
Impervious Area

**Base data:** Satellite imagery, water, wetlands, agricultural areas.

**Identification process:**
Software-based initial identification -- different wavelengths of light and near-infrared energy reflected by different surfaces, i.e. vegetation and non-vegetation.

**Accuracy assessment:**
identifies areas of potential error.

**Manual verification**
of likely areas of inaccuracy.

Aerial photography with Impervious Surface overlay
Determination of ERU

• Equivalent Residential Unit = ERU
• In South Burlington, the average residential parcel has 2,700 square feet of impervious area (rooftop, driveway, walkway, etc…)
• The ERU is the base billing unit for Stormwater Utility.
Equivalent Residential Unit (ERU): An equivalent residential unit is the base billing unit that is established for the purpose of standardizing stormwater fees and allocating costs, based on impervious area, to different property types. One ERU is equal to the amount of impervious area (e.g., rooftops and paved areas) that can be found on a typical single-family residential property and was determined to be 2,700 square feet in South Burlington.
Stormwater Credits

• By installing stormwater treatment practices as per the State of Vermont Stormwater Management Manual (2002 Standards) a facility can reduce its fees by up to 50%

<table>
<thead>
<tr>
<th>Treatment Standard or Criteria</th>
<th>Credit Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality (WQ_v)</td>
<td>15%</td>
</tr>
<tr>
<td>Groundwater Recharge (Re_v)</td>
<td>15%</td>
</tr>
<tr>
<td>Channel Protection (CP_v)</td>
<td>15%</td>
</tr>
<tr>
<td>Overbank Flood ($Q_{p10}$) or Extreme Storm ($Q_{p100}$)</td>
<td>10%</td>
</tr>
<tr>
<td>Non-structural practices</td>
<td>10%</td>
</tr>
</tbody>
</table>
## Stormwater Utility Funding

<table>
<thead>
<tr>
<th>Budget Year</th>
<th>Total SWU Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/2006</td>
<td>$ 1,149,345.00</td>
</tr>
<tr>
<td>2006/2007</td>
<td>$ 1,240,444.00</td>
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<tr>
<td>2007/2008</td>
<td>$ 1,293,618.00</td>
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<tr>
<td>2008/2009</td>
<td>$ 1,328,409.00</td>
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<tr>
<td>2009/2010</td>
<td>$ 1,346,428.00</td>
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<tr>
<td>2010/2011</td>
<td>$ 1,607,770.00</td>
</tr>
<tr>
<td>2011/2012</td>
<td>$ 1,737,618.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 9,703,632.00</strong></td>
</tr>
</tbody>
</table>
What Does the Utility Do?

- Maintains stormwater infrastructure
- Stormwater system assessment, inventory & mapping
- Maintains State and Federal permit compliance
- Illicit Discharge Detection and Elimination (IDDE)
- Water quality sampling
- Erosion control (during construction in the City)
- Watershed planning
- Capital improvement projects
- Applies for grants and grant management
- Public outreach and education
- Residential stormwater treatment system take-over

and so much more…
Stormwater Outreach / Education

Regional Stormwater Education Program (RSEP)
Illicit Discharge Detection & Elimination
Improperly installed and poorly maintained erosion control measures can allow sediment to flow into streams.
Sweeper Waste Area

Debris removed from storm drains and roadway in 2007.
Patchen Road Outfall Repair
Installation of Stormwater Treatment Practices
Farrell Street - $1M STAG Project

Stormwater Detention Pond

Swirl Separator

New Culvert

Bioretention Facility

Also installed a ~2,000 s.f. pervious asphalt parking area.
Porous Asphalt Installation
Recognition

In 2008, the South Burlington Stormwater Utility received the following awards:

- EPA Merit Award for Environmental Excellence
- NEWEA Utility of the Year Award
Links to South Burlington Stormwater Information

• Stormwater Utility Web Site: www.sburlstormwater.com
• City Web Site: www.sburl.com
• Regional Stormwater Education Program: www.smartwaterways.org
• Chittenden County Stream Team: http://ccstreamteam.org/
Questions