

Burlington Stormwater Program: Current and Future

- Complex stormwater landscape (Page 1)
- Program summary
 - Dedicated program established in 2009 (page 1) Increase in fee Jan 2014
 - Flat fee of \$3.00 for residential, \$1.17/1000 cf for commercial projects
 - One dedicated staff person, plus support from existing staff when other priorities allow
 - Annual base budget = \$760K, plus grants that we can grab (page 2)
 - Shortfall of \$240,000 from the \$1 million operating budget that was originally proposed in 2009
 - Fully funded budget ~\$1 – 1.15 million
 - By end of FY 13, will have spent \$4 million on stormwater since 2009, \$2.6 of which is from user fees, the rest from grants (including large ARRA \$1.2 million grant – 50% payback)
 - We have accomplished much (page 3)
 - Improved maintenance of infrastructure
 - Cleaning of catch basins to capture material before it gets flushed into pipes
 - Inspection and repair of catch basins, and stormwater sewer lines where required
 - Improved REVIEW of project (residential and commercial) to protect water quality during construction and over the long term
 - Maintained compliance with MS4 permit
 - Completed successful combined sewer stormwater reduction project and many other small pilot projects; update of sewer/stormwater GIS mapping (Page 4)
- Programmatic Resource Gap Analysis: *Maximize programmatic efficiency (spend \$ wisely) and benefit to Lake Champlain* (see page 5-6)
 - Fully implement current stormwater/wastewater Chapter 26 ordinance
 - No staff resources for compliance/enforcement
 - Need to develop a Burlington specific manual and other review workflow procedures to streamline the SW Management plan approval process for developers
 - Pursue proactive asset management vs. reactive response to infrastructure challenges
 - Address 2 new requirements of upcoming permit cycle MS4 permit
 - Coordination of City Department activities and formation of City wide policy
 - City wide stormwater planning (critical to prioritizing \$ for implementation)
 - Update Hydrologic/Hydraulic Model watershed by watershed
 - Set stormwater improvement goals for each watershed/sewershed
 - Evaluate improvement opportunities in each watershed (starting with highest priority watersheds)
 - Leverage our green belt/urban tree canopy as part of stormwater green infrastructure program
 - Development of metrics, data collection and reporting to citizens
 - Improve citizen services/involvement opportunities
- Next Steps: How to fill the gaps → Discussion
 - Complete rate analysis
 - Re-allocation of resources
 - Coordination group

*Recruitment for SW/GIS Tech occurring August 2013
*Anticipate filling SW/GIS Tech position by September/early October 2013

Burlington Stormwater Program: Overview

- **Burlington Stormwater Landscape**

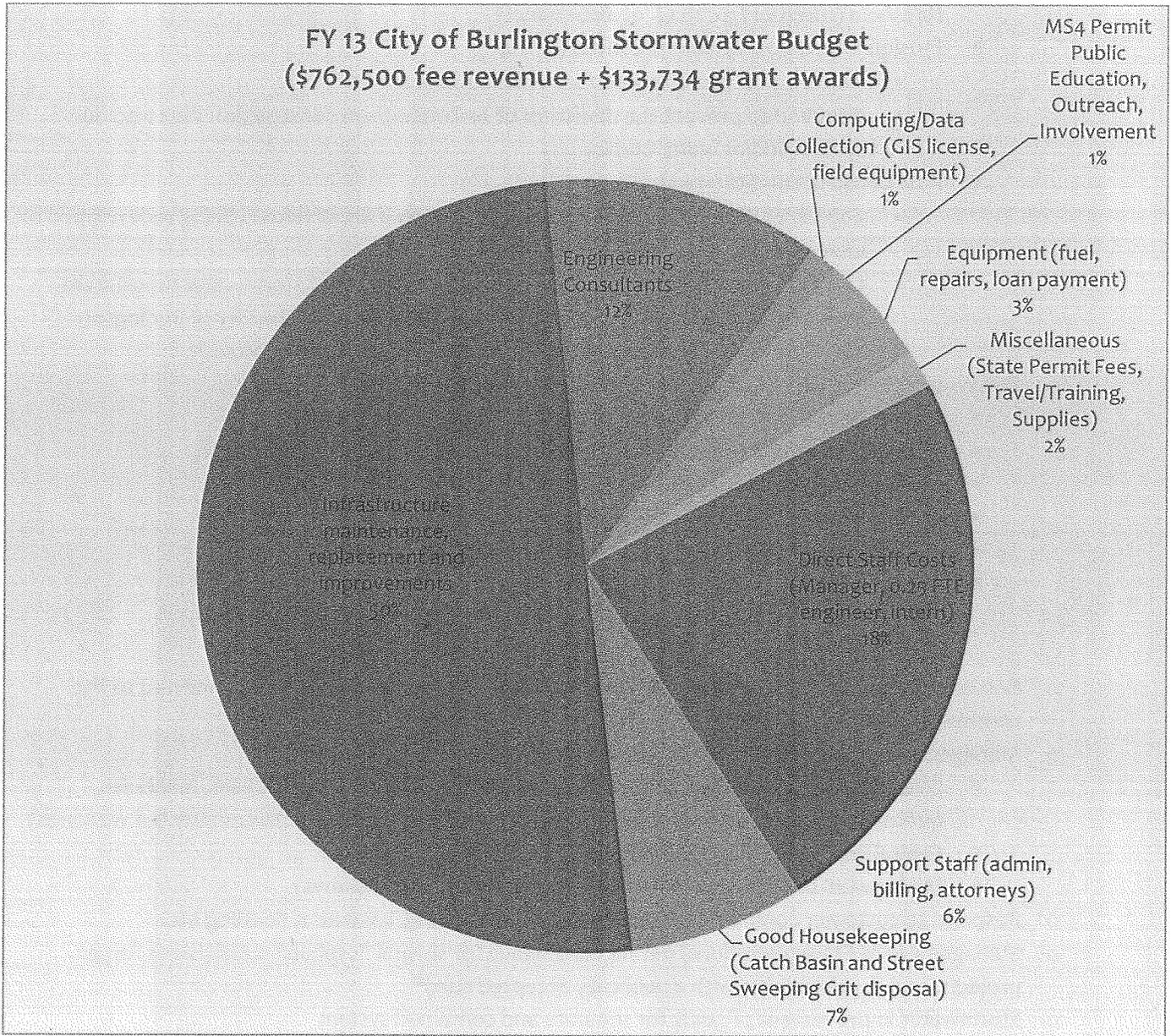
- 60% of the City drains to a combined sewer system (stormwater and wastewater discharge to same pipe)
 - 3 Wastewater Treatment Plants (Main WWTP has highest % combined)
 - Significant sewer separation and improvements to the Main WWTP were made in the late 1980s
- 40% of the City drains to over 70 separate stormwater outfalls which discharge to:
 - Englesby Brook (Impaired due to Stormwater and Bacteria)
 - Centennial Brook (Impaired due to Stormwater)
 - Potash Brook (Impaired due to Stormwater)
 - Lake Champlain (Impaired due to Phosphorus)
 - Small Tributaries to Lake Champlain
 - Winooski River
- High imperviousness (~ 20 – 75%)

- **Program Summary**

- Dedicated Program established in 2009
 - Oversight of stormwater discharges to both the separate and combined sewers system
- Revised/strengthened Chapter 26 sewer ordinance to include more stringent stormwater standards for projects
 - Link: http://library.municode.com/HTML/13987/level2/PTIICOOR_CH26WASTPOCO.html#TOPTITLE
- Established **dedicated** funding stream
 - Special Revenue Fund
 - Flat fee of \$3.00/month on single family and duplex homes; \$3.60 on triplex
 - Directly assessed fee of \$1.17/1000 sf of impervious coverage for commercial
 - Credits available currently for directly assessed customers
- Current Staffing
 - One full time stormwater program manager/stormwater administrator
 - Supported by:
 - Steve Roy, Public Works Engineer
 - Summer intern
 - Water/WW/Stormwater billing team
 - Right of Way group as construction crew and vector truck operators
 - Wastewater operators sewer video camera efforts
- Current Equipment
 - Stormwater Vector truck (to clean catch basins)
 - Street Sweeper (not owned by Stormwater but provides stormwater best management practice of sweeping)
 - * GPS GeoExplorer 6000 with centimeter accuracy + antenna

Burlington Stormwater Program: Overview

- o Current Annual Budget:



- Over \$4 million spent on Stormwater Management since 2009, with ~\$2.6 million generated from stormwater user fees and the rest from ARRA and other grant programs

Burlington Stormwater Program: 2009-Present

• *Programmatic Functions*

- Administration of Chapter 26 ordinance*
 - Chapter 26 mandates the review of projects that are well below the State's jurisdictional threshold (threshold = 400 s.f. of disturbance)
 - Erosion Prevention Sediment Control (EPSC)
 - Review of all projects > 400 s.f. of disturbance
 - Required to prevent the discharge of sediment from construction sites into our system and/or water bodies
 - Post Construction Stormwater
 - 400 s.f. of disturbance triggers possible review if impervious is being redeveloped or increased.
 - Commercial projects required to mitigate the impact of stormwater runoff from new, and where feasible, existing impervious surfaces in the City of Burlington
 - Technical assistance for single family/duplex expanding > 2500 sq.ft.
- Ensure compliance with State stormwater regulations (MS4 permit)*
 - Public Education (via Regional Stormwater Education Program)
 - Public Outreach (via Chittenden County Stream Team and our own efforts)
 - Construction Stormwater Management
 - Post Construction Stormwater Management
 - Illicit Discharge Detection and Elimination
 - Municipal Best Management Practices
 - Catch basin cleaning
 - Street sweeping
- Ensure compliance with WWTP permit condition that "no new impervious be connected to the combined system"*
- Management of Stormwater Collection System Asset
 - Oversight of maintenance and inspection activities for pipes, catch basins, manholes, outfalls, treatment systems (sand filters, infiltration systems, ponds, constructed wetlands)
 - Capital improvements (reactive)
 - Manage GIS based mapping of collection system (as time allows)
- Respond to customer complaints regarding puddles, flooding, basement flooding etc.
- Management of State operational permit compliance for several "orphan" subdivisions, larger projects, and developments with a publically accepted road*
- Stormwater improvement projects for separate and combined system
 - identification, grant writing and project management (see project list)

* Refers to regulatory requirements

Burlington Stormwater Program: 2009 - Present

Recent Infrastructure Projects Related Specifically to Water Quality Improvements (2010 – present)

- Centennial Brook Flow Restoration Plan (~\$14,000)
 - Development of Flow Restoration Plan (locating of stormwater retrofits necessary to restore the flow regime of Centennial Brook)
- Stormwater Friendly Driveway Fact Sheets (Total Budget \$9500/Grant: \$7400)
 - Compilation of information related to the design, installation and maintenance of stormwater friendly driveways (pervious systems, strip driveways, use of non-coal tar based asphalt sealants)
- Silva Cell Project for Cherry Street (Total Budget: \$48,000/Grant: \$26, 215)
 - Design and installation of a tree-based stormwater filtration and detention system
 - Design (complete)
- Update of Stormwater/Wastewater system mapping in GIS (Total Budget: \$105,000 / Grant : \$80,000)
 - Necessary for watershed/sewershed planning and for tracking and prioritizing maintenance
 - Development of asset management system (on-going, completion in 2013)
- Blanchard Beach Water Quality Improvement Project (Total Budget: \$142,018 / Grant: \$70,000)
 - Stabilization of eroding roadside swale, installation of stormwater swirl separator (for sediment removal), restoration of urban wetland to enhance stormwater treatment capacity before water discharges to a public beach on Lake Champlain
- DPW Wash Station Treatment System (Cost: \$35,000)
 - System to capture and filter the sediment, oils and greases from washing of vehicles in public works yard
 - Design/ Implementation (complete)
- Dale Road Outfall Swale Maintenance/Stabilization (~\$40,000)
 - Removal of accumulated sediment and stabilization of swale
 - Design/Implementation (complete)
- Beach Outfall Stabilization x 2 (~\$35,000)
 - Stabilization of outfall area for two beach outfalls
 - Design/Procurement (complete), Implementation (Early Spring 2013 weather permitting)
- In-Situ Pipe Lining of failing SW pipes (\$47,120)
 - Dale Road & Crescent Beach outfall pipes
- Combined Sewer Stormwater Reductions (Total Cost: \$1.2 million / 50% loan forgiveness under ARRA, payment of bond over 20 years)
 - Manhattan CSO project:
 - Design and installation of subsurface infiltration systems at 13 locations in the Old North End neighborhood in the City ROW (underneath the road); these systems receive water from almost 3 acres of impervious that would have originally gone into the combined sewer system and instead infiltrate up to a 2.5" storm event into the sandy subsurface.
 - Disconnection of H.O. Wheeler Roof (0.58 ac) runoff from combined sewer
 - Design and install a pervious concrete system at a school (H.O. Wheeler) parking lot
 - Gazo CSO project
 - Disconnection of LC Hunt Roof (1.6 ac) runoff from combined sewer; installation of 20,000 gallon storage tank to allow for water reuse by school in the future for irrigation
 - Disconnection of CP Smith Roof (0.84 ac) runoff from combined sewer; installation of 32,000 gallon storage system with a controlled release to mitigate impacts on the separate storm sewer system.

* Refers to regulatory requirements

Burlington Stormwater Program: 2013 and Beyond

- **Short term needs (FY 14 and FY 15 and beyond):**

Chapter 26: Project Review

- Quicker turn around on review and closeout for certificate of occupancy process
- Enforcement/compliance/tracking of Erosion Prevention and Stormwater Management Plans*
 - Would ensure that review efforts are not being wasted
 - Will provide metrics to measure our success
- Development of Burlington Stormwater Management Manual
 - To provide clear, defensible standards for what is required by citizens and developers
- Finalize maintenance/access agreement process so that stormwater management plans and maintenance requirements are recorded in the land records.*

MS4 Permit

- Public Outreach
 - 2012 MS-4 Permit will require that the “permittee develop program to identify opportunities for and provide technical assistance to landowners in the implementation by landowners of low impact development BMPs”*
 - Provide more technical assistance, rebates, mini-grants to citizens for SW management (see citizen services below)
- Stream flow monitoring for Englesby, Centennial and Potash (2012 MS-4 permit requirement)*
- Develop program/mechanism for compliance with Bacteria TMDL in Englesby*
- Flow Restoration Plan (FRP) development for Englesby; partner with South Burlington on the Potash FRP*

Maintenance/Infrastructure Operations

- Enhanced tracking/reporting of maintenance activities
 - Critical to maintain well operating infrastructure in face of increasingly intense storms
 - Enable better prioritization of activities (drains that are always full) and capital planning
- Video camera inspection of all corrugated metal stormwater pipes
- Increased frequency/tracking of street sweeping
- Acquire modern Hydraulic/Hydrologic Modeling software, begin model update

Coordination with other City Department

- Provide stormwater management technical services to other City Departments
 - Technical review of infrastructure improvements
 - Management of stormwater permits
 - Stormwater infrastructure mapping
- Green-belt management (see citizen services/involvement) and tree planting partnership with PnR

Citizen Services/Involvement

- “Adopt-a-Storm-Drain” program
 - Support citizens in helping keep storm drains free of debris in advance of storms
- Citizen “green-belt” projects (counts towards MS4 MM2 – Public involvement)
 - Encourage citizens to install rain gardens in the green belt
- Combined System Basement Flooding Pilot
 - Provide technical assistance and rebates for homes on the combined sewer system to install backwater prevention valves

Administrative

- Resolve impervious classification and database errors in billing database*
- Establish work flow for annual updates to billing database
- Provide mapping for directly assessed customers on web

* Refers to regulatory requirements

Burlington Stormwater Program: 2013 and Beyond

Public Relations

- Launch Burlington stormwater map
 - Project/best management practice locations and description
 - Watersheds

City-wide Policy and Programmatic Development

- Convene internal and external advisory group
 - Coordinate efforts
 - Keep ahead of dynamic regulatory landscape
 - Decide what, if any, water quality/stormwater goals the City has above and beyond permit requirements
 - Determine a specific set of standards/expectations for City projects and determine if City is willing to commit additional % of funding for stormwater goals on projects
- Develop and track metrics for reporting purposes

Complete Implementation of Stormwater reductions in Manhattan sewershed*

- Retrofit planning for "Manhattan" drainage area to fully meet State CSO policy
 - Improved flow gauging at North Champlain to determine volume of overflow
 - Update modeling using new GIS mapping

Resources needed: ~+\$250 - \$375K annual revenue for additional stormwater staff person, consultant assistance, flow monitoring, increased street sweeping (Right of Way Staff person), addition \$ for disposal of street sweeping grit, modeling software, consultant to automate entry of inspection information into GIS database, CS basement flooding prevention program

- **Mid-Term needs (FY 15- FY 17, and beyond)**

- **City wide stormwater management planning (FY 15 – FY 17)** for watersheds other than Englesby, Centennial, Potash
 - Update Hydraulic/Hydrologic modeling for watersheds, where appropriate
 - Undertake water quality/flow monitoring for discharge points
 - Establish goals (water quality and/or flow reductions) for discharge points (including WWTPs)
 - Undertake retrofit planning for each watershed to establish a list of viable projects

This is critical to providing us with data about how MUCH money we may need in the years to come which will inform choices related to rates, public/private partnerships, financing; additionally it will also document the water quality gains to be made with holistic city wide implementation vs. focusing only on stormwater impaired watersheds.

- Evaluation of financing options
 - Long term rate analysis (20 years)
 - Exploration of public/private partnerships
 - Evaluation of stormwater impact fees as a funding solution
 - Incentivize private improvements through low interest loans
- Provide improved stormwater management oversight to other City Departments*
 - Good housekeeping practice audit
 - Stormwater improvements/retrofits
 - Work with schools on stormwater curriculum

- **Long-Term (FY 17 and beyond)**

- Implementation of stormwater retrofits (Stormwater Impaired* and Lake Champlain*, others)
- Maintenance of stormwater retrofits that we have constructed*
- Tracking of improvements to water quality

* Refers to regulatory requirements