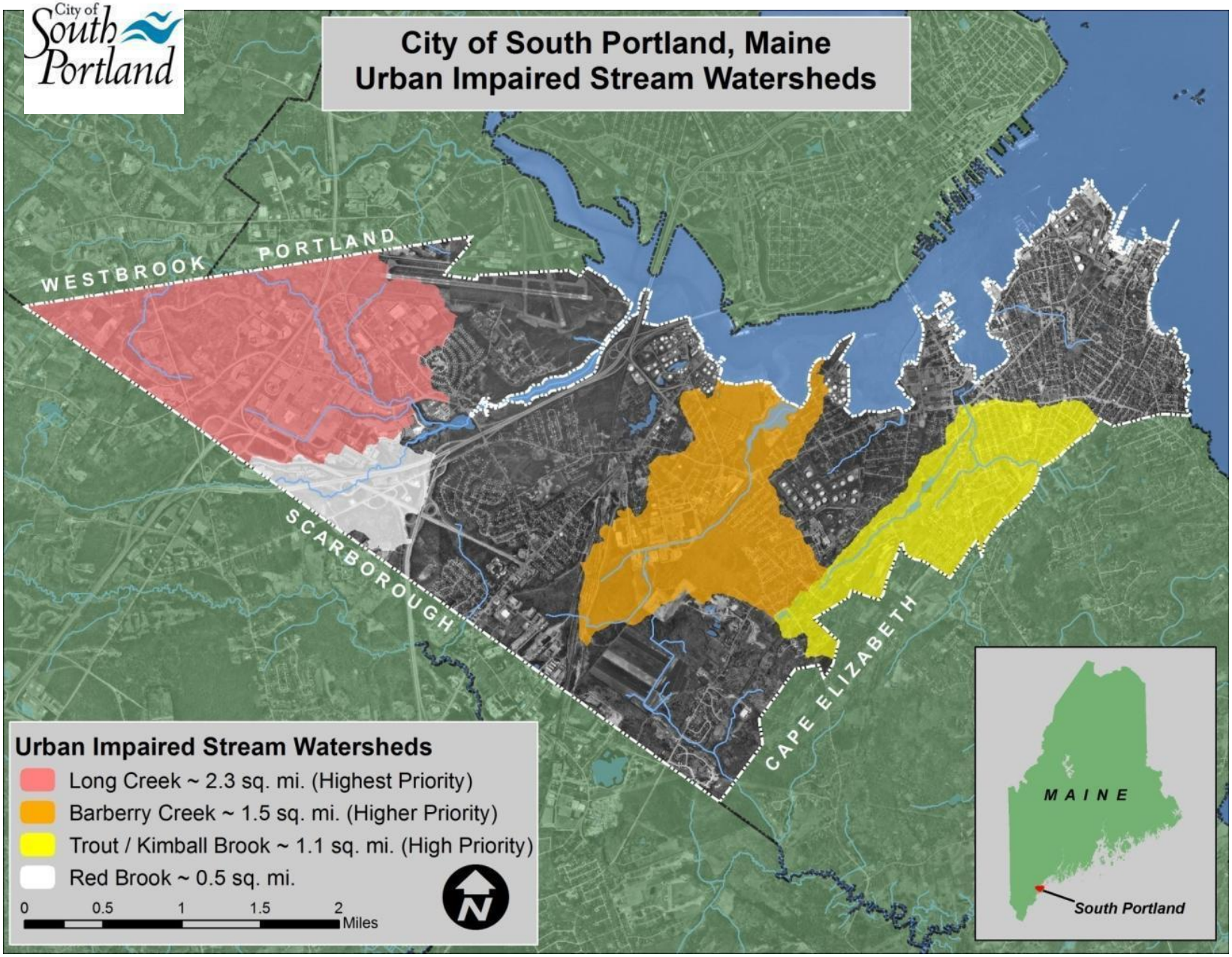
# Stormwater Phase II
# Annual Report for
# Permit Year 4 (2011-12)

City of South Portland

*Water Resource Protection Department*




*Cover Photo: South Portland elementary school students releasing trout fry into Trout Brook*

## TABLE OF CONTENTS

**List of Figures**

## List of Tables

**ACKNOWLEDGEMENTS**

This report was prepared collaboratively by the City of South Portland Water Resource Protection Department's (WRP) staff consisting of the following individuals:

- **Pat Cloutier** ~ *Director of Water Resource Protection Department*
- **Dave Thomes** ~ *Collection Systems Manager*
- **Brad Weeks** ~ *City Engineer*
- **Jim Jones** ~ *Treatment Systems Manager (retired)*
- **Paul Collins** ~ *Treatment Systems Manager (new hire)*
- **Matt Keene** ~ *GIS Intern*
- **Pam McCarthy** ~ *WRP Office Manager*
- **Jerry Collett** ~ *Sewer Maintenance Foreman*
- **Jeff Moulton** ~ *Sewer Maintenance Worker II*
- **Lee Gagnon** ~ *Sewer Maintenance Worker II*
- **Fred Dillon** ~ *Stormwater Program Coordinator*

WRP staff would also like to thank the following individuals for their assistance in developing this report:

- **Tex Haeuser, Pat Doucette, Steve Puleo, & Dave Kasik** ~ *S. Portland Planning & Development Department*
- **Shawn Pennington** ~ *South Portland Information Technology Director*
- **Sarah Neuts** ~ *South Portland Parks & Recreation Department*
- **Tony Vigue, Maurice Amaral & Calvin Muse** ~ *South Portland Community Television*
- **Tamara Lee Pinard, Jami Fitch & Sarah Plummer** ~ *Cumberland County Soil and Water Conservation District*
- **Tom Burns** ~ *GIS Mapping & Analysis*

## Introduction and Report Summary

In accordance with Maine's Small Municipal Separate Storm Sewer Systems (MS4) program, the City of South Portland continued its commitment to protect and improve local water resources. City staff and program partners from the Interlocal Stormwater Working Group (ISWG), the Friends of Casco Bay (FOCB), the Casco Bay Estuary Partnership (CBEP), the South Portland Land Trust (SPLT) and the South Portland Conservation Commission (SPCC) - among others - all participated in a wide variety of activities to mitigate the effects of stormwater pollution. This annual report documents these activities for the fourth Permit Year in the second five year General Permit Cycle (2008-2013).

A brief summary of the six required Minimum Control Measures (MCMs) along with the corresponding Best Management Practices (BMPs) is provided below. BMPs for all Minimum Control Measures were completed successfully as required. The full report that follows includes a description of the actions completed for the measurable goals of each BMP along with permit compliance status, an assessment of the appropriateness of identified BMPs, the progress in achieving identified measurable goals for each of the MCMs, and the progress in achieving the goal of reducing the discharge of pollutants to the maximum extent practicable. Also included are the results of information collected and analyzed during the reporting period, a summary of stormwater activities the City will complete in the 2012-2013 reporting cycle, and an estimate of annual expenditures for permit compliance for the reporting period and projected budget for the following year.

***Minimum Control Measure 1 – Public Education and Outreach***

- ☑ BMP 1.1 - Continue awareness and outreach efforts from previous permit cycle
- ☑ BMP 1.2 – Continue working with existing partners and seek out new partners to help raise awareness of stormwater issues
- ☑ BMP 1.3 – Continue implementing Stormwater Awareness Plan
- ☑ BMP 1.4 – Continue targeted Best Management Practices adoption efforts from previous MS4 permit cycle
- ☑ BMP 1.5 – Continue implementing BMP Adoption Plan
- ☑ BMP 1.6 – Continue school outreach efforts
- ☑ BMP 1.7 – Continue broadcasting water quality videos on Community Television

***Minimum Control Measure 2 – Public Involvement and Participation***

- ☑ BMP 2.1 – Continue observance of state and local public notice requirements
- ☑ BMP 2.2 – Continue hosting public event
- ☑ BMP 2.3 – Continue encouragement of municipal involvement in public outreach

***Minimum Control Measure 3 – Illicit Discharge Detection and Elimination***

- ☑ BMP 3.1 – Continue development of watershed-based storm sewer system infrastructure map

- ☑ BMP 3.2 – Continue enforcement of non-stormwater discharge ordinance
- ☑ BMP 3.3 – Continue development and implementation of dry weather outfall inspection program
- ☑ BMP 3.4 – Develop strategy for open ditch illicit discharge program within the highest priority watershed
- ☑ BMP 3.5 – Continue hosting annual household hazardous waste collection day (as funding available)
- ☑ BMP 3.6 – Continue supporting the Friends of Casco Bay mobile vessel pumpout service (as funding available)
- ☑ BMP 3.7 – Continue providing confidential public complaint hotline for suspected illicit discharges
- ☑ BMP 3.8 – Continue storm drain stenciling program

***Minimum Control Measure 4 – Construction Site Stormwater Runoff Control***

- ☑ BMP 4.1 – Continue notification to construction site developers and operators of registration requirements under Maine Construction General Permit or Chapter 500 – stormwater management for the discharge of stormwater associated with construction activities
- ☑ BMP 4.2 – Continue annual documentation for every construction activity that disturbs one or more acres within the urbanized area
- ☑ BMP 4.3 – Continue implementation of construction site inspection program
- ☑ BMP 4.4 – Continue promotion of certified contractors in erosion control practices

***Minimum Control Measure 5 – Post-Construction Stormwater Management in Development and Redevelopment***

- ☑ BMP 5.1 – Continue implementation of post-construction stormwater management ordinance
- ☑ BMP 5.2 – Continue implementation of tracking method for post-construction BMPs installed within the Urbanized Area and continue implementation of tracking system for annual certifications that are required by the owners or operators of the post-construction BMPs

***Minimum Control Measure 6 – Pollution Prevention / Good Housekeeping for Municipal Operations***

- ☑ BMP 6.1 – Continue implementation of written operations and maintenance procedures at all municipally owned grounds and facilities for all watersheds in Urbanized Area
- ☒ BMP 6.2 – Continue implementation of municipal employee training program
- ☑ BMP 6.3 – Continue implementation of street sweeping program
- ☑ BMP 6.4 – Continue cleaning of stormwater structures including catch basins
- ☑ BMP 6.5 – Continue maintenance and upgrade of stormwater conveyances and outfalls
- ☑ BMP 6.6 – Continue implementation of Stormwater Pollution Prevention Plans (SWPPPs)

## Minimum Control Measure 1 – Public Education and Outreach


*WRP staff presented on the City's water resource protection efforts and gave tours of the wastewater treatment plant to hundreds of local school students in PY2011-12*

The City of South Portland fulfilled its requirements for Public Education and Outreach Minimum Control Measure through continued collaboration with the Interlocal Stormwater Working Group (ISWG) and the ongoing funding to the ISWG for Public Education and Outreach services. The City also continued its ongoing partnership with the Friends of Casco Bay and collaborated with Southern Maine Community College to increase public awareness about stormwater management concerns. WRP staff provided numerous presentations on the City's water resource protection efforts to local schools, at professional conferences and workshops, and submitted several articles for publication in the City's biweekly electronic newsletter.

The overall goals for this Minimum Control Measure are:

1. To raise awareness that stormwater pollution is the most significant source of water quality problems for Maine's waters;

2. To motivate people to use BMPs that reduce stormwater pollution; and

3. To reduce stormwater pollution as a result of increased awareness and utilization of BMPs.

### *BMP 1.1 Continue Awareness Outreach Efforts from Previous Permit Cycle*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: ISWG Education Coordinator*

**FUNCTION**

To promote and increase awareness about the issues associated with stormwater pollution, which is the most significant source of water quality problems in the state.

**METHODOLOGY**

The City continued its collaboration with the Interlocal Stormwater Working Group (ISWG) to increase public awareness of stormwater management issues. Through these collaborations we assisted with the dissemination of education and outreach materials.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.1.1*** – continue education and outreach efforts from previous permit year by providing Think Blue Maine and YardScape links on City's website.
- ***Measureable Goal 1.1.2*** – continue outreach efforts from previous permit year through ongoing partnership with ISWG, which continued to use Think Blue Maine ducky logos on all YardScaping

materials to reinforce connection between lawn care activities and stormwater issues.

- ***Measureable Goal 1.1.3*** – continue outreach efforts from previous permit year through ongoing partnership with ISWG by posting informational materials in municipal buildings to raise awareness of stormwater management issues.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to provide the Think Blue Maine and YardScape links on its website and educational materials in municipal buildings (including schools) to help promote public awareness of local and regional stormwater management issues. The City also continued its collaboration with the ISWG in a variety of awareness outreach efforts as described in their Permit Year 3 Summary of Minimum Control Measure 1 (**Appendix 1**). Water Resource Protection Department staff also designed an interpretive sign for the installation of permeable pavers at City Hall (Figure 1). Therefore, all goals associated with this BMP were completed successfully as required.


**Figure 1:** interpretive sign for permeable pavers installed recently at South Portland's City Hall

## *BMP 1.2 Continue Working with Existing Partners and Seek Out New Partners to Help Raise Awareness of Stormwater Issues*

*Responsible Party: ISWG Ed. Coordinator* *Additional Party: Stormwater Program Coordinator*

**FUNCTION**

To increase impact and effectiveness of public education and outreach stormwater awareness efforts through enlistment of additional partners.

**METHODOLOGY**

Collaborate with Interlocal Stormwater Working Group (ISWG) to enlist additional partners such as the Friends of Casco Bay, the Casco Bay Estuary Partnership, University of Maine, Southern Maine Community College and other organizations to help raise awareness of stormwater management issues.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.2.1*** – continue to partner with Think Blue Maine, Casco Bay Estuary Partnership, MEDEP, University of Maine and Southern Maine Community College.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its collaboration with the ISWG to enlist new partners for increased public awareness of stormwater issues as described in **Appendix 1**. The City also continued to promote public awareness through partnerships with various entities committed to addressing stormwater pollution issues. Water Resource Department staff engaged in extensive discussions with UMaine PhD student Thomas Parr about how his research interests on the effects of urbanization on water quality could be studied in South Portland. WRP staff also assisted Southern Maine Community College faculty in developing curriculum that will explore the relationships between land use development and impacts to water quality and discussed how students may be able to assist in local water quality monitoring efforts. WRP staff also submitted several articles for publication in the City's E-Newsletter, which is sent to many municipal staff and over 1,700 residents in South Portland (Table 1). Therefore, the goal associated with this BMP was completed successfully as required.

**Table 1:** Articles submitted by WRP staff to City's E-newsletter

| Date | Article |
|---|---|
| 8/4/11 | Trout Brook Watershed Restoration Project Gaining Momentum |
| 9/8/11 | Annual Household Hazardous Waste Collection Day – Saturday October 15th from 9AM - Noon |
| 3/12/12 | City Supports Efforts to Increase Clean Water Awareness through Urban Runoff 5K |
| 3/16/12 | Street Sweeping and Catch Basin Cleaning to Reduce Pollution from Stormwater Runoff |

### *BMP 1.3 Continue Implementing Stormwater Awareness Plan*

*Responsible Party: ISWG Education Coordinator* *Additional Party: N/A*

**FUNCTION**

To increase homeowner awareness of stormwater issues through the development of a systematic and concerted program among MS4 clusters and other interested parties throughout the state.

**METHODOLOGY**

Continue participation in and collaboration with the ISWG to develop a variety of educational outreach materials through the implementation of a Stormwater Awareness Plan.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.3.3*** – continue implementation of Stormwater Awareness Plan including ongoing annual evaluations of process indicators for the remainder of the permit cycle.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

Through the City's continued participation in and collaboration with the ISWG, a Stormwater Awareness Plan was developed and approved by DEP in June 2009 as described in **Appendix 1**. The report describes the implementation status of the Awareness Plan and process indicators and identifies significant milestones and any changes made to the Awareness Plan. Therefore, all goals associated with this BMP were completed successfully as required.

### *BMP 1.4 Continue Targeted Best Management Practices Adoption Efforts from Previous MS4 Permit Cycle*

*Responsible Party: ISWG Education Coordinator* *Additional Party: N/A*

**FUNCTION**

To increase homeowner awareness about the types of Best Management Practices that can be employed to address stormwater issues at the individual parcel level.

**METHODOLOGY**

Continue participation in and collaboration with the ISWG to promote the use of Best Management Practices through a variety of educational outreach materials and activities.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.4.1*** – the ISWG will continue to refine YardScaping materials, as needed, based on either new research or feedback from users. It will offer YardScaping Adult Education classes to change lawn care practices and build local support for implementation of YardScaping practices. ISWG will also develop and streamline the Point of Sale lawn care education program by

incorporating lessons learned, developing new or refining existing promotional materials, offering YardScaping classes at Point of Sale locations, refining tracking methods for products and promotional materials, and building local networks for dissemination of YardScaping materials.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its collaboration with the ISWG to promote the adoption of Best Management Practices by homeowners and other interested parties as described in **Appendix 1**. Therefore, the goal associated with this BMP was completed successfully as required.

### *BMP 1.5 Continue Implementing BMP Adoption Plan*

*Responsible Party: ISWG Education Coordinator* *Additional Party: N/A*

**FUNCTION**

To change homeowner landscaping behaviors for decreased usage of lawn fertilizers, pesticides and herbicides; and to promote the adoption of BMPs that minimize stormwater pollution (e.g., higher / less frequent mowing, water conservation, lawn seeding in the fall, etc.).

**METHODOLOGY**

Continue participation in and collaboration with the ISWG to implement a MDEP-approved BMP Adoption Plan.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.5.3*** – implement MDEP-approved BMP Adoption Plan that includes annual evaluations of process indicators.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its collaboration with the ISWG to implement a MDEP-approved BMP Adoption Plan as described in **Appendix 1**, which details the implementation status of the Plan and identifies significant milestones along with any changes made to the Plan. Therefore, the goals associated with this BMP were completed successfully as required.

### *BMP 1.6 Continue School Outreach Efforts*

*Responsible Party: ISWG Ed. Coordinator* *Additional Party: Stormwater Program Coordinator*

**FUNCTION**

To promote increased awareness about water quality and stormwater pollution issues in the City's public school system.

**METHODOLOGY**

Continue participation in and collaboration with the ISWG to conduct a variety of educational outreach activities. Also attempt to build partnerships between City staff and local schools to integrate water quality and stormwater program concepts into academic curriculum.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.6.2*** – as funding permits, continue the incorporation and implementation of "It's all connected" school curriculum in elementary and/or middle schools.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its collaboration with the ISWG to conduct educational outreach activities as described in **Appendix 1**. WRP staff also made numerous presentations to schools throughout the City (Table 2). Every 4th grade student in the City and several middle school classes (over 300 individuals) had an opportunity to discuss watersheds, water quality, the impacts of various land uses and development on water quality and the City's stormwater program. In early May 2012, WRP staff also partnered with the Portland Water District on a week-long trout release unit for 4th graders that reinforced the classroom instruction they had received earlier. The event received very favorable coverage from the local press (Figure 2). Therefore, the goals associated with this BMP were completed successfully as required.

**Table 2:** WRP presentations to schools for PY2011-12

| Date | School |
|---|---|
| 4/3/12 | Brown Elementary School (grade 4) |
| 4/4/12 | Skillins Elementary School (grade 4) |
| 4/9/12 | Small Elementary School (grade 4) |
| 4/23/12 | Dyer Elementary School (grade 4) |
| 4/24/12 | Kaler Elementary School (grade 4) |
| 4/25/12 | Mahoney Middle School (grade 7) |
| 4/27/12 | Mahoney Middle School (grade 7) |
| 5/21/12 | Mahoney Middle School (grade 8) |
| 5/30/12 | Greater Portland Christian School (grade 4) |

The Portland Daily Sun

Trout Brook fish release awash in water-quality lessons

Written by David Carkhuff

SOUTH PORTLAND — Today, when 60 Skillin Elementary fourth graders release brook trout into the aptly named Trout Brook, they will see baby fish they have raised in a classroom set free in the wild. But one thing they won't see is an oil stain that pooled near the trailhead to Trout Brook Nature Preserve earlier this week. The stain has vanished, a first-hand example of pollution running off into an already stressed waterway, officials said.

"When we started here on Monday, it was a sunny day, and there was a big oil stain right at the head of the guardrail here, and that oil stain is clean and gone now," Fred Dillon, South Portland stormwater program coordinator, said Thursday during a visit to the brook in anticipation of today's fish-release. "All the rain that we've had has washed that down into the brook."

Polluted runoff is one of the causes of Trout Brook — a 2.9-mile-long stream that flows through Cape Elizabeth and South Portland — making a list of "urban impaired streams" as ranked by the Maine Department of Environmental Protection. Officials said the brook is not meeting state water quality standards. The causes, according to environmental officials, include polluted runoff and increased storm flow from impervious surfaces such as rooftops, parking lots and roads.

"It's like the death from a thousand cuts, that sort of thing," Dillon said.

**Figure 2:** 5/4/12 article on trout release with 4th graders

## *BMP 1.7 Continue Broadcasting Water Quality Videos on Community Television*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

To promote increased awareness about stormwater pollution issues among South Portland residents and other interested parties.

**METHODOLOGY**

Use the City's Community Television system to broadcast educational videos about water quality issues and considerations.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 1.7.1*** – continue to air videos related to water quality on South Portland's Community Television system.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City's Community Television system continued to extensively air educational videos highlighting a wide variety of water quality related topics. During the permit year period, SPCTV broadcast over 60 hours of programming related to water quality. Of particular note, SPCTV produced a video of the Stormwater Program Coordinator making a presentation about the City's water resource protection efforts to a middle school class that is available for streaming from the City's website (Figure 3). As a result of these activities, the goal associated with this BMP was completed successfully as required.

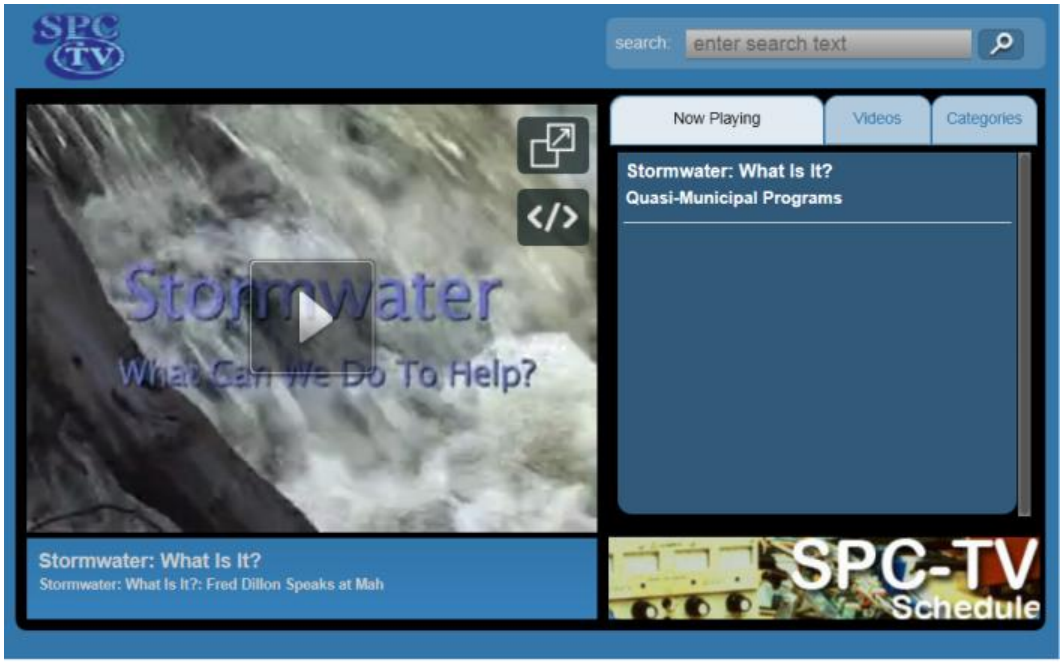



**Figure 3:** video produced by SPCTV of stormwater presentation to middle school students

## Minimum Control Measure 2 – Public Involvement and Participation

The overall goal of this MCM is to involve the public in both the planning and implementation process for improving water quality and reducing stormwater quantity via the implementation of the City's Stormwater Program Management Plan and Stormwater Management Performance Standards (Chapter 27-1536). The City fulfilled its requirements for the Public Involvement and Participation Minimum Control Measure through its continued participation in and collaboration with the Interlocal Stormwater Working Group (ISWG) and the continued funding to the ISWG for Public Involvement and Participation services.

*Residents lined up along Waterman Drive awaiting the start of the 2011 Household Hazardous Waste Collection Day (October 2011)*

Additionally, the City has established public involvement and participation procedures as part of its development review process (e.g., Planning Board meetings) that provide regular opportunities for members of the public to offer comments on the implementation of stormwater performance standards. City staff and officials have also been appointed to the Long Creek Watershed Management District (a quasi-municipal entity), which has an open process whereby members of the public can participate in implementing the Long Creek Watershed Management Plan (LCWMP). The LCWMP was developed largely in response to the stormwater pollution impacts from surrounding land uses and was commissioned by the City of South Portland through an EPA 319 grant.

### *BMP 2.1 Continue Observance of State and Local Public Notice Requirements*

*Responsible Party: ISWG Stormwater Program Coordinator & LCWMD Executive Director*

*Additional Parties: Water Resource Protection & Planning Departments*

**FUNCTION**

To provide appropriate public notice for meaningful involvement and participation in the planning and implementation of the City's Stormwater Management Program, Performance Standards (Chapter 27-1536) and Long Creek Watershed Management Plan.

**METHODOLOGY**

Continue participation in the ISWG and conform to applicable MEDEP, City of South Portland and Long Creek Watershed Management District public notice requirements.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 2.1.1*** – ISWG, the City and the Long Creek Watershed Management District will follow state and local Public Notice requirements for Stormwater Program Management Plans and Watershed Management Districts. Copies of the plans are available on the Long Creek Restoration project websites.
- ***Measureable Goal 2.1.2*** – ISWG, the City and the Long Creek Watershed Management District will follow state and local Public Notice requirements when involving stakeholders in the implementation of the MS4 General Permit, the City's Stormwater Program Management Plan, the City's Stormwater Management Performance Standards (Ch. 27-1536) and the Long Creek Watershed Management Plan.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

Following the adoption of Stormwater Management Performance Standards by the City in April of 2009, virtually every Planning Board meeting has afforded the public with an opportunity to participate in efforts to improve local water quality through the reduction of impacts from stormwater pollution. This occurs because nearly every Planning Board meeting consists of development proposals with provisions for stormwater management. Additionally, in 2012 the City revised several provisions of the municipal ordinance, including the Stormwater Performance Standards (as of 9/1/12 these proposed revisions had received Planning Board approval but were still awaiting approval from the City Council). Finally, the City is currently in the process of updating the Comprehensive Plan, which broadly addresses stormwater management concerns. In all cases, numerous opportunities have been provided for public input. Records of public notices, attendance and minutes for these meetings are maintained by the City's Planning Department and posted on the City's website.

As a quasi-municipal body, the Long Creek Watershed Management District also allows public participation for efforts to reduce impacts from stormwater pollution at each of its regular meetings and posts meeting agendas and minutes on its website. As a result of these numerous activities, the goals associated with this BMP were completed successfully as required.

## *BMP 2.2 Continue Hosting Public Event*

*Responsible Party: ISWG Education Coordinator* *Additional Party: Water Resource Protection Dept.*

**FUNCTION**

To increase public awareness of stormwater pollution issues for a target audience in a segment of the urbanized area.

**METHODOLOGY**

Provide highly visible opportunities for members of the public to meaningfully participate in activities to reduce impacts from stormwater pollution.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 2.2.1*** – ISWG and/or the City will annually host/conduct or participate in at least one public event such as storm drain stenciling, stream cleanup, household hazardous waste collection day, volunteer monitoring, neighborhood educational events, conservation commission outreach program, Urban Impaired Stream outreach program, or adopt a storm drain or local stream program. The target audience will be a segment of the urbanized area population that the City wishes to reach. The ISWG and/or the City will consult with DEP to ensure the event will satisfy the requirements for this BMP.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

<u>Household Hazardous Waste Collection Day – October 15, 2011</u>

The City continued to provide an annual Household Hazardous Waste Collection Day for South Portland residents and businesses. This event was held at the Water Resource Protection Department's Wastewater Treatment Facility and resulted in the collection of a variety of wastes including a variety of petroleum products, paints, solvents, pesticides, batteries (lead acid, nickel cadmium and lithium), fluorescent lights, among other materials. To assist in improving these services to South Portland residents, the City also administered a resident questionnaire. The results from the 218 people who completed the questionnaire indicated that a considerable number of respondents were familiar with Think Blue Maine, the City's stormwater management efforts and the Long Creek Restoration Project while fewer were familiar with YardScaping and the Interlocal Stormwater Working Group (**Appendix 2**). We will continue to administer similar questionnaires at future Household Hazardous Waste Collection Days to improve our services and increase awareness about HHW and polluted stormwater runoff.



<u>Urban Runoff 5K – April 20, 2012</u>

The City partnered with the Interlocal Stormwater Working Group in helping to organize the Urban Runoff 5K, a clean water educational event held at Deering High School in Portland (Figure 4). Over 500 people participated in the run / walk portion of the event and over 1,000 people attended the clean water related activities after. See **Appendix 1** for more details.


**Figure 4:** participants in the Interlocal Stormwater Working Group's Urban Runoff 5K

Trout Release – April 30 – May 4, 2012

Water Resource Protection Department staff partnered with the Portland Water District on a trout release educational module during the first week of May 2012. Numerous teachers and over 300 elementary and middle school students participated in the event, which received considerable local media coverage (see above). Door hangers (Figure 5) were also distributed by students from Mahoney Middle School to homes in the area to notify local residents of the event.


**Figure 5:** door hanger to notify residents of trout fry release into Trout Brook in May 2012

The Stormwater Program Coordinator also attended two Conservation Commission meetings (one in January 2012 and another in May 2012) to brief members on the status of the DEP-funded Trout Brook Watershed Management Plan development process. As a result of these numerous activities, the goals associated with this BMP were completed successfully as required.

## *BMP 2.3 Continue Encouragement of Municipal Involvement in Public Outreach*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

To increase the role of other City departments in promoting awareness of local and regional stormwater pollution issues.

**METHODOLOGY**

Continue communications with and provide educational materials to other municipal departments (e.g., Planning & Development, Code Enforcement, Public Services, School, etc.) to disseminate to the public, contractors, developers and other interested parties.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 2.3.1*** – continue to participate in public outreach (e.g. serving on local water resource committees, participating in public/school events, writing water quality/stormwater articles) or encourage other municipal involvement, as appropriate.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

Members of the WRP staff continued their close involvement in and commitment to local water resource protection concerns by serving in various capacities on the boards of regional organizations. The City's Stormwater Program Coordinator is currently serving on the Casco Bay Estuary Partnership's (CBEP) Board. The mission of CBEP is to protect and restore the water quality, and fish and wildlife habitat of the Casco Bay ecosystem, while ensuring compatible human uses.

Additionally, the Collection Systems Manager and Stormwater Program Coordinator serve on the Interlocal Stormwater Working Group (ISWG), which consists of 14 communities in the Greater Portland metropolitan area working in collaboration to address stormwater management concerns in the region. In early 2010, the Collection Systems Manager began serving a 3 year term on the Long Creek Watershed Management District (LCWMD) Governing Board. The LCWMD is responsible for overseeing the restoration of Long Creek through the implementation of the Watershed Management Plan. The Stormwater Program Coordinator is serving on the LCWMD's Technical Committee, which will provide guidance to the Board for the implementation of stormwater management practices.

Educational brochures are available at several municipal locations throughout the City. The Planning & Development, Code Enforcement and Public Services departments all provide Maine Erosion and Sedimentation Control Law brochures to contractors, construction site owners or operators, members of the general public and other interested parties. The City also provides informational materials on stormwater management and water resource protection at numerous locations throughout South Portland.

Finally, by the end of PY2011-12 the City neared completion of the Trout Brook Watershed Management Plan (WMP) development process. Even though the organizational meetings for this effort are technically ineligible for consideration under the MS4 General Permit (because project funding originated from EPA's 604(b) program), they still bear mentioning since public outreach and involvement is and will be such a prominent element of the work plan. As a result of these numerous activities, the goals associated with this BMP were completed successfully as required.

## Minimum Control Measure 3 – Illicit Discharge Detection & Elimination

The City of South Portland fulfilled its requirements for the Illicit Discharge Detection & Elimination (IDDE) Minimum Control Measure through a variety of activities as described below. The overall goal of this MCM is to implement and enforce a program to detect and eliminate illicit discharges and non-stormwater discharges.

*WRP staff repairing cross connection between stormwater and sewer systems following dry weather inspection of stormwater outfall (April 2012)*

### *BMP 3.1 Continue Development of Watershed-Based Storm Sewer System Infrastructure Map*

*Responsible Party: Water Resource Protection*

*Additional Party: N/A*

**FUNCTION**

To provide a current, detailed and accurate digitally-based map of the City's storm drain infrastructure to assist in stormwater management and planning.

**METHODOLOGY**

Continue to contract with consultant and hire summer intern for GPS data collection and GIS mapping of all stormwater related infrastructure in the City.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 3.1.3*** – by the end of Permit Year 5, develop watershed-based stormwater infrastructure map showing the location of all catch basins, connecting surface and subsurface infrastructure with in-flow and out-flow pipe direction, and locations of all discharges of stormwater outfalls.
  Each catch basin will be uniquely identified to facilitate control of potential illicit discharges, and to ensure proper operation and maintenance of the structures. For each outfall, the following information will be included: type, material, and size of conveyance; outfall or channelized flow (e.g. 24" concrete pipe); and the name and location of the immediate surface water body or wetland to which the stormwater runoff discharges (or, if an outfall does not discharge directly to a named water body, the name and location of the nearest named water body to which the outfall eventually discharges).

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

WRP has employed a watershed framework to complete nearly all of the digital mapping (~90%) for the publicly-owned stormwater infrastructure throughout the entire City. Unique identifiers have been assigned to all located publicly-owned stormwater outfalls, catch basins and drain manholes for the entire

City and flow directions have been established for all located stormwater pipes. Extensive attribute information has been collected for stormwater outfalls in the Long Creek and Trout Brook watersheds and the City will be collecting similar information for the remaining urban impaired stream watersheds in future permit years.

WRP continued to use the GIS-based asset management system for catch basin maintenance developed in PY2009-10. While cleaning catch basins, maintenance crews use a Toughbook laptop computer to collect key attribute information for each structure that will be integrated into an asset management program to assist in optimizing system performance. In April and May of 2012, the City participated in a regional effort to obtain new aerial imagery from which additional geospatial data can be derived (e.g., street trees, impervious cover, new development, etc.). The cost to obtain this imagery was considerable ($~14K) given its high accuracy and resolution (3" per pixel). As a result of these activities, the City continues to be considerably ahead of schedule for the goals of this BMP.

## *BMP 3.2 Continue Enforcement of Non-Stormwater Discharge Ordinance*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

To prohibit unpermitted or un-allowed non-storm water discharges to the storm drainage system through municipal ordinance and to establish the legal authority and procedures to carry out all inspection, monitoring and enforcement activities necessary to ensure compliance with this ordinance.

**METHODOLOGY**

Use the authority granted by the ordinance to enforce the provisions therein.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 3.2.1*** – continue to enforce the Non-Stormwater Discharge Ordinance.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to enforce the Non-Stormwater Discharge Ordinance as specified in the South Portland Code of Ordinances Chapter 22 Sewer and Drains, Article XIV Non-Stormwater Discharge (§§22-200 - 22-209), which was passed on September 8, 2004. Therefore, the goal for this BMP was completed as required. (Please see BMP 3.7 for a summary of IDDE inspections conducted for the permit year).

## *BMP 3.3 Continue Development and Implementation of Dry Weather Outfall Inspection Program*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

To identify potential sources of illicit non-stormwater discharges for elimination.

**METHODOLOGY**

Physically inspect stormwater outfalls in priority subwatersheds during dry weather periods.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.3.6*** – continue dry weather outfall inspections in the additional sub-watersheds within the highest priority watershed (Long Creek) and begin inspections in one or more sub-watersheds of the second highest priority watershed (Trout Brook). Outfalls will be added to the inspection list as additional structures are identified or if follow-up is needed. Opportunistic inspections will also be documented.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its dry weather outfall inspection program in the Long Creek and Trout Brook watersheds. As with previous years, the field data collection form for conducting dry weather inspections of stormwater outfalls was derived directly from the format provided in *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine*. This form has been converted into a digital format for use with a handheld Trimble Juno GPS unit, which can be exported in a variety of formats for seamless integration with traditional electronic document formats (e.g., Excel, Access, ArcMap etc.). WRP staff inspected 79 of 83 stormwater outfalls in the Long Creek watershed and all 8 outfalls in the Trout Brook watershed.

WRP staff continued bacteria monitoring for the Willard Beach stormwater system, though on a more limited basis than in PY2010-11 due to staffing changes for the City's beach program. WRP staff was also instrumental in the City's rejoining of the Maine Healthy Beaches Program in August 2012. WRP and MHB staff will be collaborating on paired bacteria and optical brightener monitoring of the Willard Beach stormwater system in September and October of 2012 to identify potential human bacteria sources. Finally, WRP staff conducted bacteria monitoring for Trout Brook at the end of PY2011-12 (Figure 6.). This monitoring was done to identify potential nutrient sources from livestock (assuming bacteria was originating from domesticated animal manure) and to help guide MEDEP and USEPA pharmaceuticals testing conducted in late August 2012. Therefore, the City completed the goals for this BMP as required.

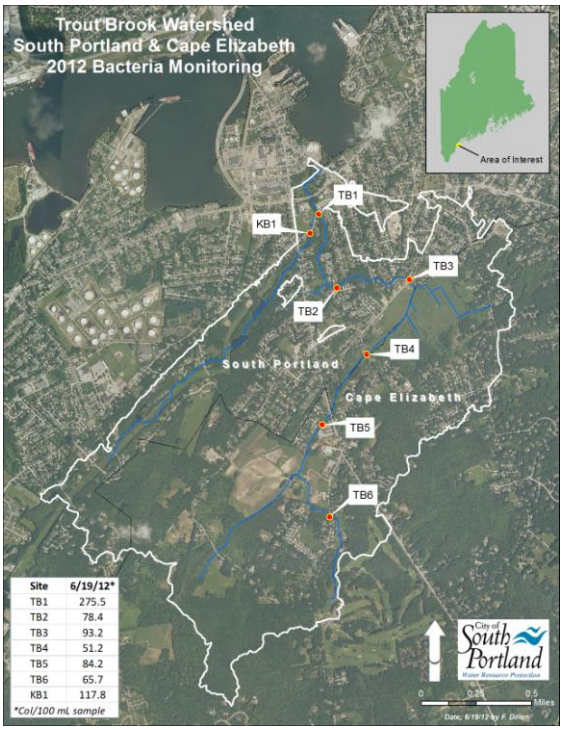



**Figure 6:** Trout Brook bacteria sampling locations

## *BMP 3.4 Develop Strategy for Open Ditch Illicit Discharge Program Within the Highest Priority Watershed*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

Identify potential sources of illicit discharge from open drainage ditches that serve as part of the City's stormwater collection and conveyance system.

**METHODOLOGY**

Identify the extent, location and hydrologic connectivity of drainage ditches in the Long Creek watershed in relation to the City's stormwater collection system and develop an IDDE strategy for all relevant ditches.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.4.2*** – during Permit Years 3-5, develop a strategy for detecting illicit discharges in the open ditch system of the highest priority watershed (Long Creek).

***ACTIONS COMPLETED DURING PERMIT YEAR 4***

WRP staff participated in discussions with Interlocal Stormwater Working Group on the further development of an open ditch stormwater discharge inspection system. The City will continue to collaborate with the ISWG in PY2012-13 to implement a more defined set of stormwater ditch inspection procedures for the our highest priority watershed (Long Creek). As a result of these activities, the goal associated with this BMP was completed successfully as required.

## *BMP 3.5 Continue Hosting Annual Household Hazardous Waste Collection Day*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To provide a means for residents to dispose of household hazardous waste.

**METHODOLOGY**

Host an annual Household Hazardous Waste collection day.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.5.1*** – provide a reasonable means for residents to dispose of hazardous materials by continuing to host an Annual Household Hazardous Waste (HHW) collection day.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

As described for BMP 2.2, the City organized a Household Hazardous Waste Cleanup Day on October 15,

2011. The event was held at the Water Resource Protection Department's Wastewater Treatment Facility and resulted in the collection of a variety of wastes including pharmaceuticals, batteries (lead acid, nickel cadmium and lithium), fluorescent lights, various solvents, liquid pesticides, and paints, among other materials. The cost to the City for this one day event was approximately $15,000. The City's Household Hazardous Waste (HHW) Collection Day for 2012 will take place on October 13th and will include a participant survey questionnaire similar to the one administered last year (**Appendix 2**) to measure residential awareness of general HHW considerations and to help gauge the effectiveness of the program. Therefore, the goal associated with this BMP was completed successfully as required.

### *BMP 3.6 Continue Supporting the Friends of Casco Bay Mobile Vessel Pumpout Service*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To support the Friends of Casco Bay's mobile vessel pumpout service.

**METHODOLOGY**

Annual financial contribution ($5,000) to pumpout program.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.6.1*** – as funding is available, continue to financially support the mobile vessel pumpout service.

**ACTIONS COMPLETED DURING PERMIT YEAR 3**

In recognition of the valuable role the mobile vessel pumpout service plays for South Portland's coastal community, the City continued its ongoing support through a $5,000 donation to the Friends of Casco Bay's program. Therefore, the goal associated with the BMP was completed successfully as required.

### *BMP 3.7 Continue Providing Confidential Public Complaint Hotline for Suspected Illicit Discharges*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To provide a confidential method for residents to report suspected illicit discharges to the City's stormwater system.

**METHODOLOGY**

Use voicemail and online system for residents to anonymously report suspected illicit discharges and conduct follow up inspections to document findings from resident reports.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.7.1*** – continue to provide an easy and confidential method for individuals to report suspected illicit connections or illegal dumping via the voice mail system and / or the online complaint form for the Water Resource Protection Department.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to maintain a Stormwater Violations Hotline and Online Complaint Report form that allowed concerned citizens to easily and anonymously report any suspected incidents of non-stormwater discharge violations to the publicly owned stormwater system. While no complaints were filed through the hotline or online reporting system during the permit year, numerous Illicit Discharge Detection & Elimination (IDDE) inspections were conducted in response to direct calls or notifications from other City departments. In the cases where the reported incidents were determined to be actual IDDE events, follow-up or corrective actions were taken as described in Table 3. Therefore, the goal associated with this BMP was completed successfully as required.

**Table 3:** IDDE incident reports for PY2011-12

| Report Date | Incident Location | Reported Problem | Findings / Follow-up |
|---|---|---|---|
| 7/12/2011 | Broadway & Elm | Liquid leakage with strong offensive odor | Confirmed spill but unable to identify source |
| 8/9/2011 | 435 Cottage - Thai Taste | Report of pressure washing of grease trap screens on pavement draining to catch basin | Investigated but unable to confirm; sent letter to property owner explaining prohibited activity |
| 8/19/2011 | Cottage Rd - Post Office water main break | Erosion from water line break to MS4 catch basin and Mill Cove | Investigated and informed PWD crew of proper ESC practices |
| 10/14/2011 | 174 Cash Street | Report of dumping of unidentified liquid into MS4 catch basin | Investigated but unable to confirm |
| 11/3/2011 | Settler Rd - Country Gardens Condos | Oil sheen in drainage swale | Investigated and determined that sheen was naturally formed; no further action needed. |
| 11/5/2011 | Coach & Westbrook St | Report of gas spill in MS4 catch basin | Investigated and discovered residual odor but unable to identify source |
| 11/17/2011 | 257 Elderberry | Hydraulic fluid spill | Investigated and confirmed spill; determined source to be DPW plow truck & suggested use of spill kits on all trucks |
| 11/23/2011 | Broadway / SMCC | Hydraulic fluid spill | Investigated and confirmed spill; determined source to be Pine Tree Waste trash truck. SPFD and Pine Tree cleaned spill. |
| 2/6/2012 | 5 Pilgrim Road | Cross connection of sewer into MS4 system | Required correction of cross-connection ASAP. |
| 2/22/2012 | 690 Main St - Irving / Circle K | Gas spill from fuel pump | SPFD promptly cleaned fuel on pavement & Irving had gas removed from nearby catch basin. |
| 3/6/2012 | Best Western / Merry Manor | Suspicious discharge from storm drain in back of property | Investigated but unable to confirm |
| 3/22/2012 | Jetport Plaza Mall | Landscape contractor dumping sand in privately owned CB | Investigated and informed contractor & property manager that deliberate sand discharge to MS4 was prohibited |
| 3/23/2012 | Best Western / Merry Manor | Opportunistic inspection confirmed discharge from pool backwash | Informed maint. mngr. that pool backwash discharge to surface water was prohibited; contacted DEP for follow-up. DEP later determined that pool discharge was OK since surface water not involved. |
| 4/11/2012 | 160 Providence Ave | Residential pool discharge to Trout Brook | No discharge observed upon site visit |
| 5/2/2012 | Boston St | Antifreeze dumped in City CB | Dump discovered during routine CB cleaning; sent letters to all abutting property owners |

## *BMP 3.8 Continue Storm Drain Stenciling Program*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To provide a visible reminder to residents about the close connections between their activities, the stormwater collection / conveyance system and potential impacts to local surface waters.

**METHODOLOGY**

Continue ongoing annual catch basin stenciling program.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 3.8.1*** – continue to annually stencil catch basins in conjunction with catch basin cleaning.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to stencil catch basins as part of its annual catch basin cleaning program (e.g., half of the catch basins that were cleaned were also stenciled). Nearly all of the City's approximately 2,800 catch basins are cleaned on an annual basis and approximately 50% of these are stenciled depending on how worn the paint is from previous stencil applications. Therefore, the goal associated with this BMP was completed successfully as required.

## Minimum Control Measure 4 – Construction Site Stormwater Runoff Control

The City of South Portland fulfilled its requirements for the Construction Site Stormwater Runoff Minimum Control Measure through a variety of activities as described below. The overall goals of this MCM are to develop, implement, and enforce a program that reduces pollutants in stormwater runoff to the City's regulated small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre.

*Construction entrance for High School upgrade stabilized with crushed stone (June 2012)*

### *BMP 4.1 Continue Notification to Construction Site Developers and Operators of Registration Requirements under Maine Construction General Permit or Chapter 500 –Management for the Discharge of Stormwater Associated with Construction Activities*

*Responsible Party: Water Resources Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To reduce the amount of stormwater runoff pollution by ensuring that construction site developers and operators use appropriate stormwater BMP practices and are aware of their obligations under applicable state regulations.

**METHODOLOGY**

Use existing municipal notification procedures through development application and review process.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 4.1.2*** – annually evaluate current system and modify, if necessary.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

During the site plan review process the City confirmed that projects needing the Maine Construction General Permit (MCGP) sent in their Notice of Intent (NOI) before receiving approval from the South Portland Planning Board. The City also confirmed that the MEDEP had all applicable projects on file. All building permit applicants disturbing greater than one acre received a copy of the NOI to comply with the MCGP.

Also, all projects that triggered the one acre threshold went through site plan review; these applicants were provided with an information packet on appropriate erosion and stormwater control practices from the City. The City's Stormwater Performance Standards (Ch. 27-1536) also required any project with more than 15,000 square feet of disturbed area to receive approval from the Planning Board. These projects were subject to a modified site plan approval process, which carefully considered sediment and

erosion control practices.

The City hired third party inspectors to evaluate proposed site plans. Each site plan was reviewed to ensure that proposed construction phasing included soil erosion and sedimentation control components. Site plans that lacked appropriate soil erosion and sediment control components were brought to the attention of the City and design engineer for further action. As a result of these numerous and varied activities, the goal associated with this BMP was completed successfully as required.

### *BMP 4.2 Continue Annual Documentation for Every Construction Activity that Disturbs One or More Acres within the Urbanized Area*

*Responsible Party: Water Resource Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To annually document all construction activities disturbing one or more acres within the urbanized area for use in the construction site inspection program (BMP 4.3) and thereby reduce the amount of stormwater pollution entering the City's water resources.

**METHODOLOGY**

Establish documentation procedures to ensure conformance with local and state stormwater laws (South Portland Ordinance § 27-1536 and Maine Construction General Permit and Chapter 500, respectively).

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 4.2.1*** – implement a tracking system to record every activity that disturbs greater than or equal to one acre. This system will track and differentiate construction activities within an urban impaired stream watershed, priority watershed(s), and all other watersheds. The system will be used to summarize data to be included in the annual report submitted to the DEP.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City documents construction activities disturbing one or more acres through a notification process involving the Planning Department, construction contractors and the Long Creek Watershed Management District (for projects occurring in the Long Creek watershed). Planning Department personnel, general contractors and LCWMD staff routinely submit site inspection report forms with accompanying photos which are then filed electronically in a secure folder on the City's intranet. The Stormwater Program Coordinator reviews the site inspection reports as they are received to confirm proper completion and whether any follow up actions are needed. An Excel file is used to facilitate project tracking and reporting on a watershed basis (see BMP 4.3 below). Therefore, the goal for this BMP was completed successfully as required.

## *BMP 4.3 Continue Implementation of Construction Site Inspection Program*

*Responsible Party: Water Resources Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To establish a program for conducting regular and consistent construction site inspections to reduce the amount of stormwater pollution entering the City's water resources.

**METHODOLOGY**

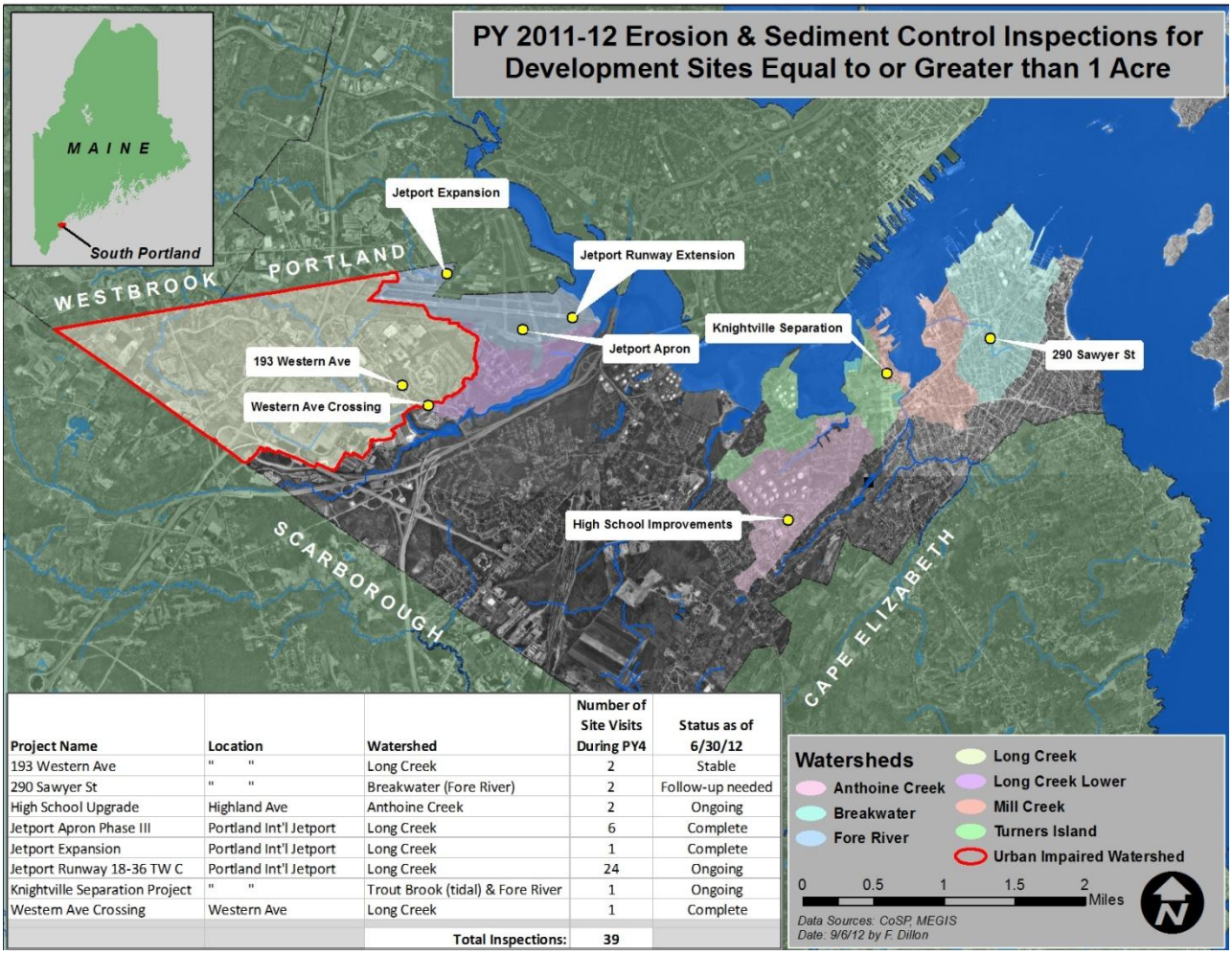
Develop and implement construction site inspection program in accordance with local and state stormwater laws (South Portland Ordinance § 27-1536, Maine Construction General Permit, Chapter 500, and General Permit for Small MS4s, respectively).

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 4.3.3*** – continue implementing process for tracking and notifying the site developer or contractor of noncompliance issues. Construction site inspectors will complete an inspection report that will be transmitted to the City, and necessary enforcement will be the responsibility of the City. Sites that are not in compliance will be issued a written letter from the Planning and Development Department requiring the site to come into compliance within a specified time period. If the violation continues, following the inspection by City staff or a duly designated person, a recommendation to the Planning Board would be made to call (use) the performance guarantee to correct the problem. Continued non-compliance will be reported to the DEP with supporting documentation.
- ***Measurable Goal 4.3.4*** – inspect construction sites located in the watershed of an urban impaired stream a minimum of three times, and inspect construction sites located in all other watersheds a minimum of two times. For all construction sites, at least one of the required inspections will be at project completion.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to require erosion and sediment control inspections on construction sites greater than or equal to 1 acre of disturbed area (Figure 7). There were a total of eight construction projects inspected 39 times over the course of PY2011-12. Three of these projects were located at the Portland International Jetport and were routinely inspected by a third party (the Cumberland County Soil & Water Conservation District). The remaining five projects were either inspected according to the conditions of approval following the site plan review process or done in response to concerns about potential erosion problems. City staff met with contractors prior to the start of construction for the High School Improvement and Knightville Stormwater Separation projects to review the site inspection process. City and contractor staff conducted inspections for these projects. For the potential problem sites, contractors were informed of proper erosion and sediment control practices at the time of site inspections by City staff.

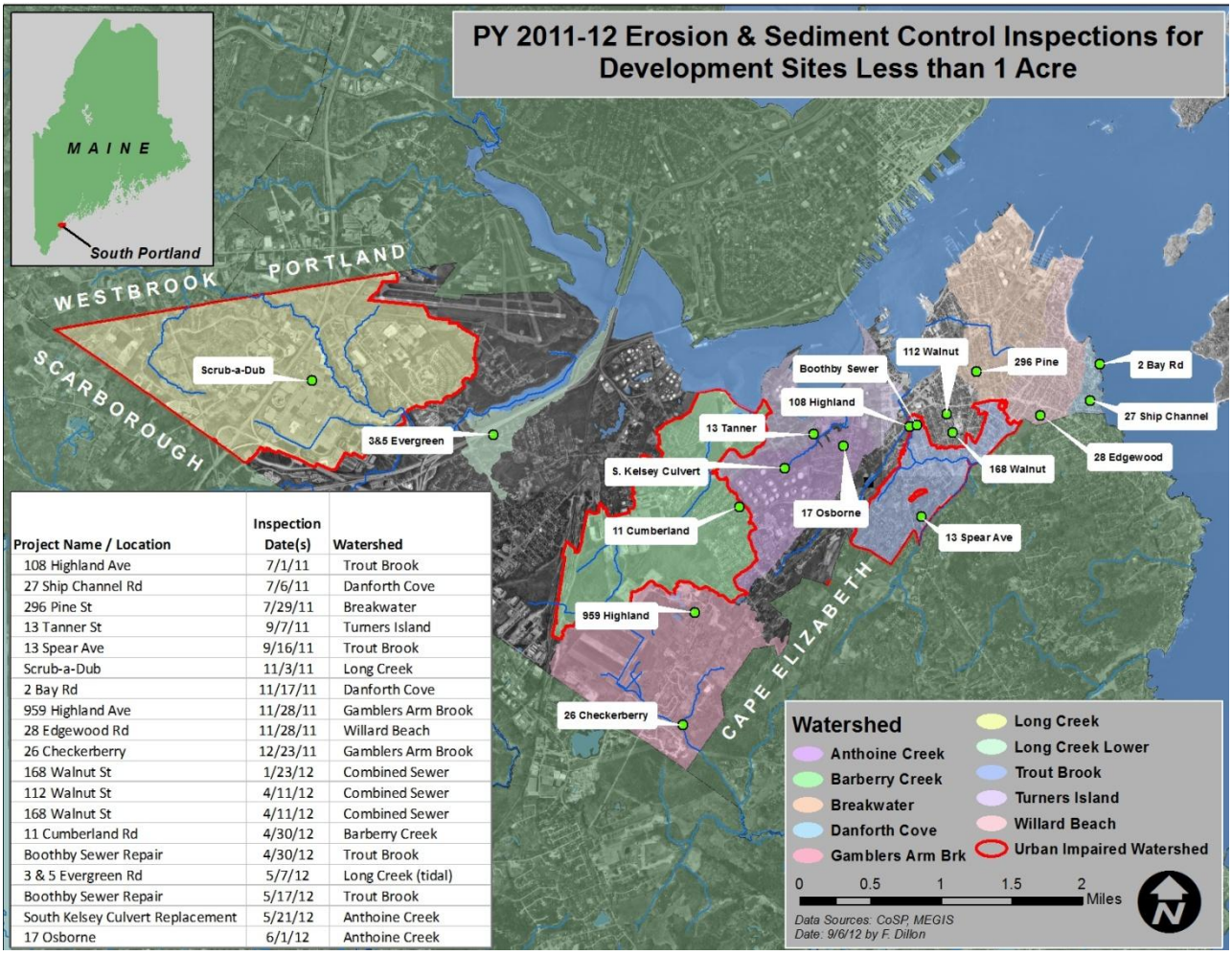



| Project Name | Location | Watershed | Number of Site Visits During PY4 | Status as of 6/30/12 |
|---|---|---|---|---|
| 193 Western Ave | " " | Long Creek | 2 | Stable |
| 290 Sawyer St | " " | Breakwater (Fore River) | 2 | Follow-up needed |
| High School Upgrade | Highland Ave | Anthoine Creek | 2 | Ongoing |
| Jetport Apron Phase III | Portland Int'l Jetport | Long Creek | 6 | Complete |
| Jetport Expansion | Portland Int'l Jetport | Long Creek | 1 | Complete |
| Jetport Runway 18-36 TW C | Portland Int'l Jetport | Long Creek | 24 | Ongoing |
| Knightville Separation Project | " " | Trout Brook (tidal) & Fore River | 1 | Ongoing |
| Western Ave Crossing | Western Ave | Long Creek | 1 | Complete |
| | | **Total Inspections:** | **39** | |

**Figure 7:** PY2010-11 erosion and sediment control (ESC) inspections for sites greater than 1 acre

Inspectors used the City's field data form to document potential sources of stormwater pollution and recommend follow up actions. Following each site visit, individual inspection reports and supporting photographs were transmitted to the City in electronic format for any necessary follow up actions. City staff then incorporated all field inspection forms into an electronic database for record keeping and project tracking. The inspections identified a variety of erosion and sediment control issues at some sites, including inadequate protection of catch basins, improper installation of silt fence, the presence of sediment-laden track-out from the site entrance / exit, and the inadequate stabilization of stockpiles, among others. All of these issues were eventually corrected by the site contractors following notification from the inspectors or the City.

Additionally, as specified in the City's Stormwater Performance Standards (Ch. 27-1536), 19 follow-up inspections were conducted for 7 construction project sites with an acre or less of disturbed area (Figure 8). In these cases, the Building Inspector identified that additional erosion and sediment control measures were needed for the project. As a result of these various activities, the goals associated with this BMP were completed successfully as required.




| Project Name / Location | Inspection Date(s) | Watershed |
|---|---|---|
| 108 Highland Ave | 7/1/11 | Trout Brook |
| 27 Ship Channel Rd | 7/6/11 | Danforth Cove |
| 296 Pine St | 7/29/11 | Breakwater |
| 13 Tanner St | 9/7/11 | Turners Island |
| 13 Spear Ave | 9/16/11 | Trout Brook |
| Scrub-a-Dub | 11/3/11 | Long Creek |
| 2 Bay Rd | 11/17/11 | Danforth Cove |
| 959 Highland Ave | 11/28/11 | Gamblers Arm Brook |
| 28 Edgewood Rd | 11/28/11 | Willard Beach |
| 26 Checkerberry | 12/23/11 | Gamblers Arm Brook |
| 168 Walnut St | 1/23/12 | Combined Sewer |
| 112 Walnut St | 4/11/12 | Combined Sewer |
| 168 Walnut St | 4/11/12 | Combined Sewer |
| 11 Cumberland Rd | 4/30/12 | Barberry Creek |
| Boothby Sewer Repair | 4/30/12 | Trout Brook |
| 3 & 5 Evergreen Rd | 5/7/12 | Long Creek (tidal) |
| Boothby Sewer Repair | 5/17/12 | Trout Brook |
| South Kelsey Culvert Replacement | 5/21/12 | Anthoine Creek |
| 17 Osborne | 6/1/12 | Anthoine Creek |

**Figure 8:** PY2010-11 erosion and sediment control (ESC) inspections for sites less than 1 acre

## *BMP 4.4 – Continue Promotion of Certified Contractors in Erosion Control Practices*

*Responsible Party: Water Resources Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To encourage contractors to receive MEDEP certification (or equivalent training) in erosion control practices as a means of reducing the amount of stormwater pollution into the City's water resources.

**METHODOLOGY**

Provide informational materials from the MEDEP's Nonpoint Source Training and Resource Center to contractors and developers as part of the project proposal and site plan review process.

**PERMIT YEAR 4 MEASURABLE GOALS**

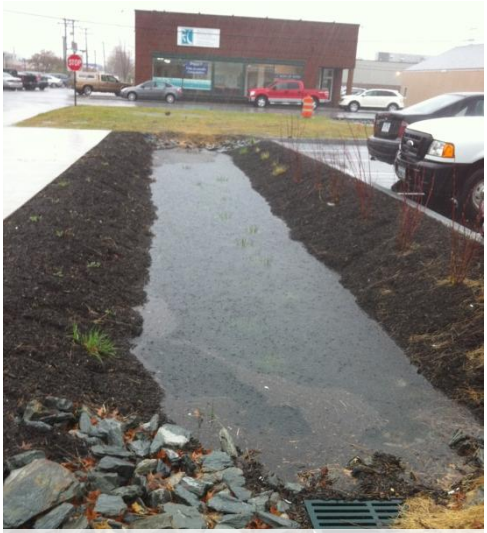
- ***Measurable Goal 4.4.1*** – continue to encourage contractors to be certified in erosion and sediment control through the DEP Non-Point Source Training and Resource Center or its designee.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to provide information materials (Maine Erosion and Sedimentation Control Law) to contractors as part of the project proposal and site plan review process. In the spring of 2012, five staff members from the Water Resource Protection Department's Collection Systems Division attended MEDEP's erosion and sediment control training for contractors. City staff also contacted ISWG, the City of Portland and MEDEP to discuss a possible collaboration that would prepare more private contractors for the upcoming erosion and sediment control certification requirements for working in the shoreland zone. Therefore, the goal associated with this BMP was completed successfully as required.

## Minimum Control Measure 5 – Post-Construction Stormwater Management of Development and Redevelopment

The City of South Portland fulfilled its requirements for the Post-Construction Stormwater Management Minimum Control Measure through a variety of activities as described below. The overall goals of this MCM are to develop and implement a program that addresses stormwater runoff from new development and redevelopment projects greater than or equal to one acre in size, including projects less than one acre that discharge to the MS4 and are part of a larger common plan of development or sale; implement local ordinance regulations to ensure the adequate long-term operation and maintenance and proper functioning of post-construction BMPs; and to annually document all related post-construction activities for inclusion the City's annual stormwater report.



*Bioretention cell during heavy rain at South Portland's City Hall / Transit Hub (April 2012)*

### *BMP 5.1 Continue Implementation of Post-Construction Stormwater Management Ordinance*

*Responsible Party: Water Resources Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To develop local regulations that support and enhance state stormwater pollution regulations (MEDEP Chapter 500 and *General Permit for the Discharge of Stormwater From Small Municipal Separate Storm Sewer Systems*) by ensuring the appropriate and adequate use of structural and nonstructural BMPs for new development and redevelopment projects.

**METHODOLOGY**

Create a local regulatory mechanism or ordinance to address post-construction stormwater runoff from new development and redevelopment projects greater than or equal to one acre in size, including projects less than one acre that discharge to the MS4 and are part of a larger common plan of development or sale.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 5.1.4*** – implement post-construction stormwater ordinance to ensure long-term operation and maintenance of post-construction BMPs.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to implement the Stormwater Management Performance Standards (local ordinance Chapter 27-1536) to ensure that post-construction BMPs were being properly operated and maintained. In early 2012, a comprehensive review of the stormwater ordinance was completed to determine its relative

effectiveness. We conducted a comparative analysis of stormwater standards for several surrounding communities and determined that South Portland's ordinance was among the most protective. We also developed a cost-benefit analysis for all the development / redevelopment projects that have been completed since the enactment of the stormwater ordinance in April 2009. Finally, we identified a few key provisions in our existing stormwater standards for small lot redevelopment that could be relaxed slightly without compromising water quality protection objectives.

The Coastal Communities Stormwater Management Manual that was developed in 2011 continues to serve as a potentially valuable resource for smaller development / redevelopment projects (15,000 $ft^2$ or less) in the City and beyond. However, given the slow pace of construction over the past few years and continued concerns about added costs, only a few small development / redevelopment projects have incorporated LID practices into their design. To further encourage the use of LID practices, City staff met with faculty from Southern Maine Community College's Sustainability Center to discuss ideas for incorporating green stormwater management practices into some of their curriculum. Consequently, SMCC will be providing a course in the fall of 2012 featuring LaMarr Clannon from Maine NEMO that will be filmed by volunteers from the City's Community Access TV program for airing at a later date. As a result of these activities, the goals associated with this BMP were completed successfully as required.

### *BMP 5.2 Continue implementation of tracking method for post-construction BMPs installed within the Urbanized Area and continue implementation of tracking system for annual certifications required from the owners or operators of the post-construction BMPs*

*Responsible Party: Water Resources Protection Dept.* *Additional Party: Planning Dept.*

**FUNCTION**

To develop a method to ensure that post-construction BMPs are adequately operated and maintained.

**METHODOLOGY**

Use site plan review process to impose post-construction BMP inspection and O&M requirements as specified in the recently amended municipal ordinance (Chapter 27-1536).

**PERMIT YEAR 4 MEASURABLE GOALS**

***Measurable Goal 5.2.2*** – continue to implement post-construction BMP tracking program with yearly evaluations to modify as necessary.

*Reporting:* documentation of all BMPs and annual certifications will be entered into a database management system or other recordkeeping system for tracking and annual reporting to DEP. The following information will be included in the annual report:

- Cumulative number of sites that have post construction BMPs discharging to City's MS4.
- Summary of the number of sites that have post-construction BMPs discharging into the City's MS4

that were reported to municipality.

- Number of sites with documented functioning post-construction BMPs.
- Number of sites that required routine maintenance or remedial action to ensure the post-construction BMP was functioning as intended.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

Beginning in PY2010-11, the owners / operators of all sites >15,000 $ft^2$ with structural stormwater management BMPs constructed after the adoption of the City's Stormwater Management Performance Standards in April 2009 were required to submit annual third party certified inspections. The City worked closely with the Long Creek Watershed Management District and Interlocal Stormwater Working Group to develop the inspection procedures that address entire qualifying sites through the use of both non-structural and structural BMPs.

There were considerably more properties with structural stormwater BMPs requiring third party inspections in PY2011-12 than in previous permit years (Table 4). There are numerous other sites that were either proposed for construction or in the process of being constructed that will become subject to the annual inspection requirements in future permit years (Figure 9). For PY2012-13, the City will continue to work closely with the LCWMD and ISWG to further refine post-construction BMP inspection procedures.

**Table 4:** Post-construction BMP third party inspection and reporting status for PY2011-12

| PROJECTS | 3PI Report Received by 7/15/12? | Follow-up Needed? | Comments |
|---|---|---|---|
| **Private** | | | |
| 28 Edgewood | No | No | Building unoccupied as of 7/15/12 |
| Pape Subaru | Yes | - | - |
| Peary Terrace | No | Yes | Contact property owners |
| Residential Mortgage Services | No | Yes | Contact property owner / operator |
| Troiano Waste Services | Yes | - | - |
| Tru Choice Credit Union | Yes | - | - |
| VanEastland LLC | Yes | - | - |
| Western Ave Crossing | No | Yes | Contact owner / operator & design consultant |
| | | | |
| **City of South Portland** | | | |
| Long Creek PS | Yes | - | - |
| Mahoney Middle School | No | Yes | BMP repairs scheduled for Oct 2012. |
| Transit Hub | Yes | - | - |
| | | | |
| **LCWMD** | | | |
| Darling Ave | Yes | - | - |
| Dick's Sporting Goods | Yes | - | - |
| Philbrook Ave | Yes | - | - |
| | | | |
| **City of Portland** | | | |
| Jetport Deicing Facility | No | No | Tracked by Jetport through MSGP requirements |
| Jetport Parking Expansion | No | No | " " |

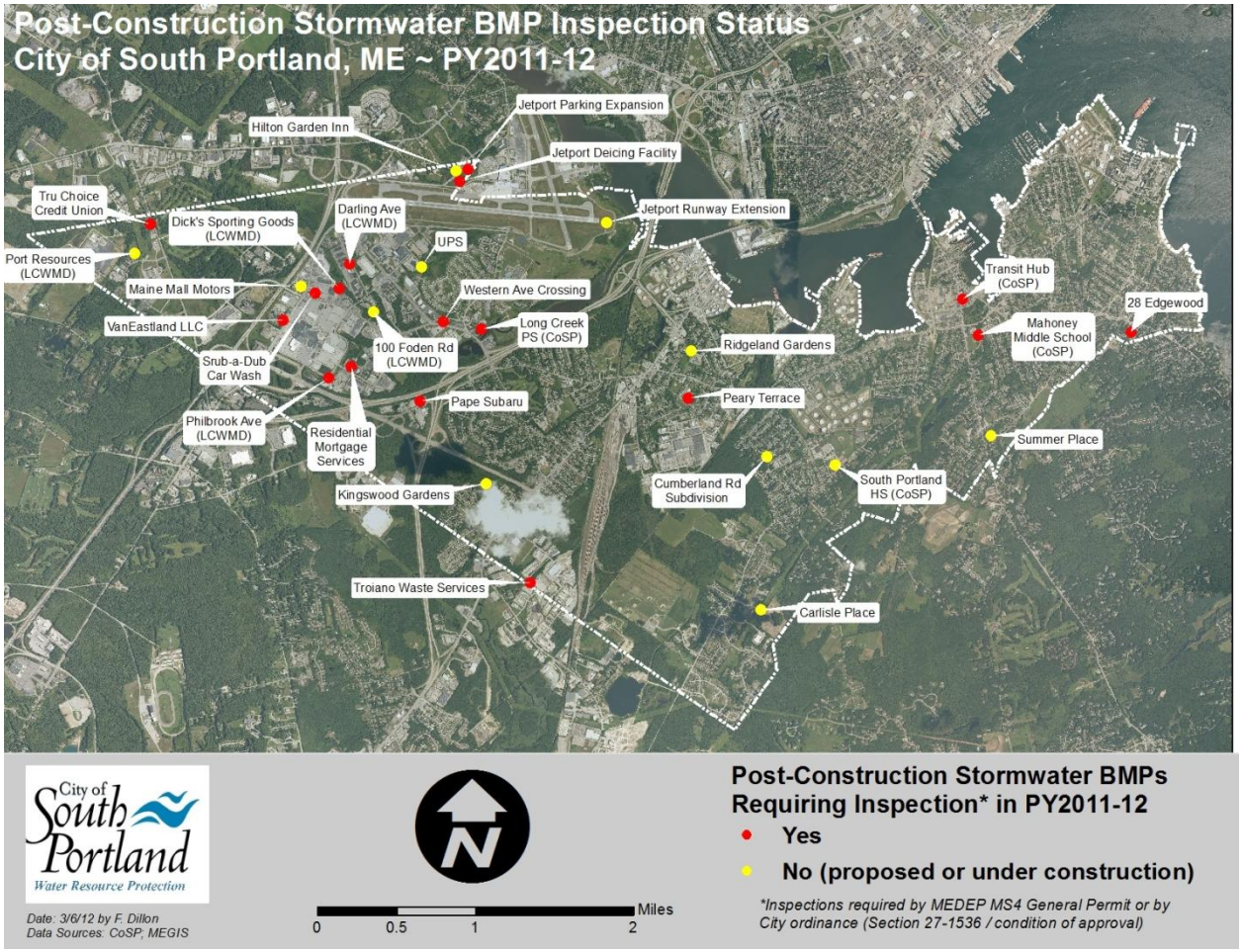



**Figure 9:** Locations of qualifying post-construction structural stormwater BMPs in South Portland

The City continued to explore the use of Google Earth to provide key information about properties requiring inspections to prospective third parties. This information includes photos, record drawings and stormwater management plans that can be accessed directly from the web. We are also exploring another approach that would build upon the web-based BMP tracking system used by the LCWMD and being adapted for use by ISWG communities. We expect to have a new and improved system in place for third party inspectors to use for PY2012-13. As a result of these activities, the goal associated with this BMP has been completed successfully as required.

## Minimum Control Measure 6 – Pollution Prevention / Good Housekeeping for Municipal Operations

*Stormwater BMP Maintenance Workshop for regulated MS4 community municipal staff (October 2011)*

The City of South Portland fulfilled its requirements for the Pollution Prevention / Good Housekeeping for Municipal Operations Minimum Control Measure through a variety of activities as described below. The overall goals of this MCM are to develop an inventory of all municipal operations that have the potential to generate stormwater pollution; conduct a municipal employee training program; develop a sweeping program for all publicly *owned streets and* parking lots; develop a cleaning and maintenance program for all City-owned catch basins and other stormwater structures; evaluate and implement a prioritized schedule for maintaining and upgrading the City's stormwater system; and develop Stormwater Pollution Prevention Plans (SWPPPs) for all applicable municipal facilities and operations.

### *BMP 6.1 Continue Implementation of Written Operations and Maintenance Procedures at all Municipally Owned Grounds and Facilities for all Watersheds in Urbanized Area*

*Responsible Party: Stormwater Program Coordinator* *Additional Party: N/A*

**FUNCTION**

To identify all applicable activities at municipally owned or operated facilities that have the potential to generate stormwater pollution.

**METHODOLOGY**

Develop a GIS-based inventory of all City properties with a list of associated municipal activities that have the potential to generate stormwater pollution.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 6.1.3*** – develop and implement written operation and maintenance (O&M) procedures that include maintenance schedules and inspection procedures to ensure long-term operation of structural and non-structural controls that reduce stormwater pollution to the maximum extent practicable for all watersheds in the Urbanized Area. As specified in the General Permit for Small MS4s, the O&M procedures will address, as applicable:
  - Proper use, storage, and disposal of petroleum and non petroleum products, hazardous materials, waste materials, pesticides and fertilizers, including minimizing the use of these products and an alternative product analysis

- Spill response and prevention
- Vehicle and equipment storage, maintenance, and fueling
- Amount of deicing materials used each deicing season;
- Landscaping and lawn care, including, where applicable, an evaluation of reduced mowing frequencies, establishing and maintaining buffers, and cutting vegetation within 100 feet of a stormwater conveyance or surface water
- Erosion and sedimentation control
- Feeding gulls, waterfowl or other wildlife

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued to provide all relevant municipal departments with the O&M procedures developed by ISWG that include maintenance schedules and inspection protocols to ensure the ongoing and proper functioning of structural and non-structural stormwater pollution controls for our entire Urbanized Area (Figure 10). Therefore, the City has successfully completed the goal associated with this BMP as required.

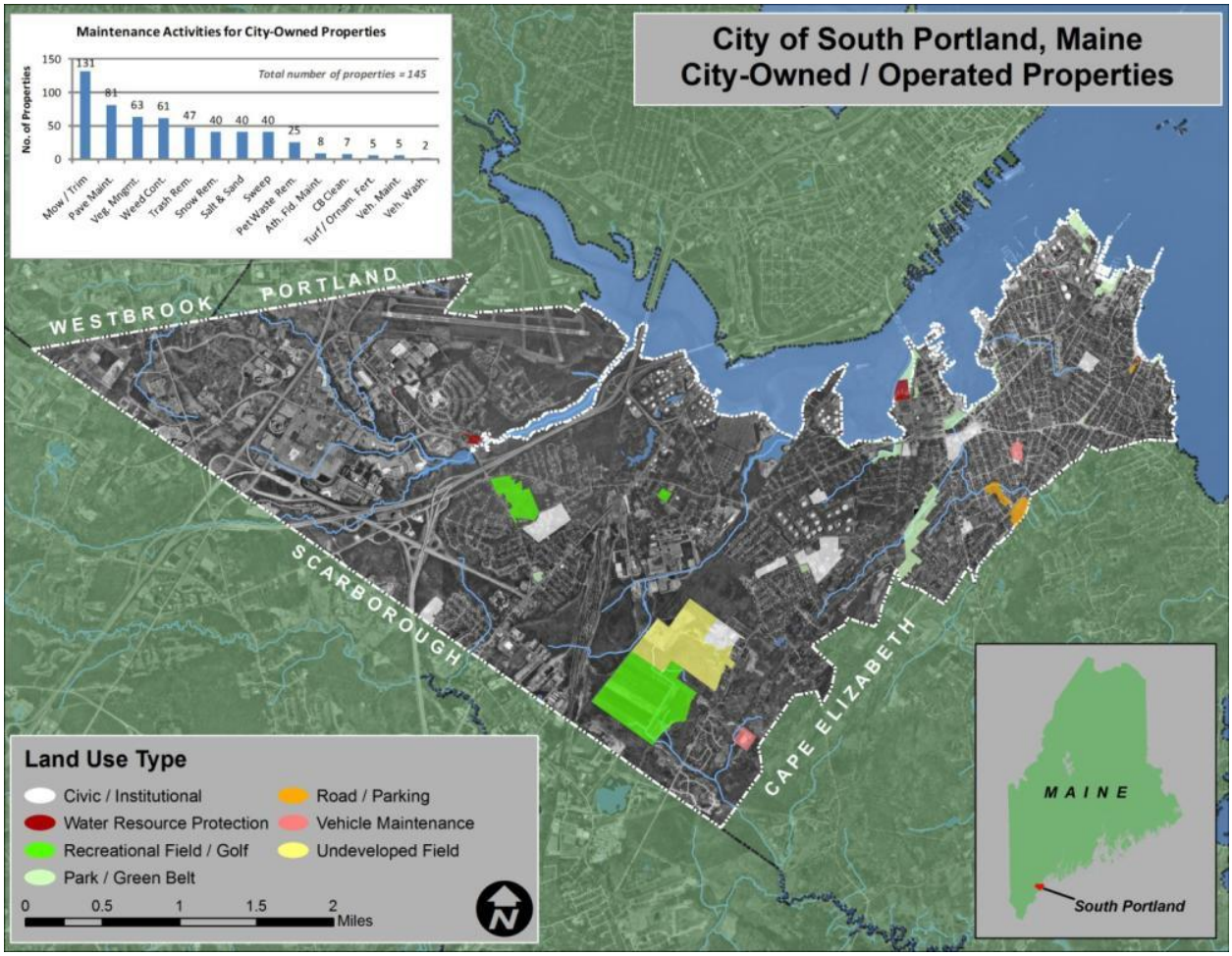



**Figure 10:** Properties owned, operated or maintained by the City (excluding roads)

## *BMP 6.2 Continue Implementation of Municipal Employee Training Program*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To provide relevant and timely training for all applicable municipal employees to assist in the effective implementation of the City's Stormwater Program Management Plan and ultimately the elimination of stormwater pollutants from all municipal operations.

**METHODOLOGY**

Develop and deliver targeted training materials and resources for all relevant municipal operations (e.g., street and pavement maintenance, landscaping, vehicle maintenance, snow removal, etc.).

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measureable Goal 6.2.2*** – during Permit Years 4 and 5, implement municipal employee training program to reduce stormwater pollution potential from municipal operations. Topics to be covered by the training program may include, but not be limited to:
  - Maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural stormwater controls to reduce pollutants discharged from the separate storm sewers.
  - Controls for reducing or eliminating the discharge of pollutants into the separate storm sewers from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations, snow disposal areas, and waste transfer stations.
  - Procedures for disposing of waste removed from the separate storm sewers and areas listed above in accordance with all regulatory requirements (such as dredge spoil, accumulated sediments, floatables, and other debris).

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued collaborating with ISWG to provide stormwater management training to municipal staff in PY2011-12. In October 2011, the City hosted the classroom portion of a 6 hour UNH Stormwater Center Summer & Winter BMP Maintenance Workshop that was attended by over 70 individuals (Figure 11). Classroom training consisted of a presentation by UNHSC staff on the various types of stormwater BMPs employed in the region along with a discussion of associated maintenance costs and considerations. This was followed by a tour of recently installed BMPs in the Long Creek Watershed and a demonstration of maintenance practices for a proprietary stormwater treatment device (pictured above). The overall objective of the workshop was to emphasize the importance of stormwater BMP maintenance that is increasingly required for MS4 permit compliance.

Also in partnership with ISWG, in June 2012 the City of South Portland hosted a well attended Pollution Prevention & Good Housekeeping workshop for municipal staff from several communities in the greater

Portland area (Figure 12). A brief quiz was administered following the presentation and the results indicated that the attendees understood and remembered the topics presented to them. Therefore, the City has successfully completed the goal associated with this BMP as required.

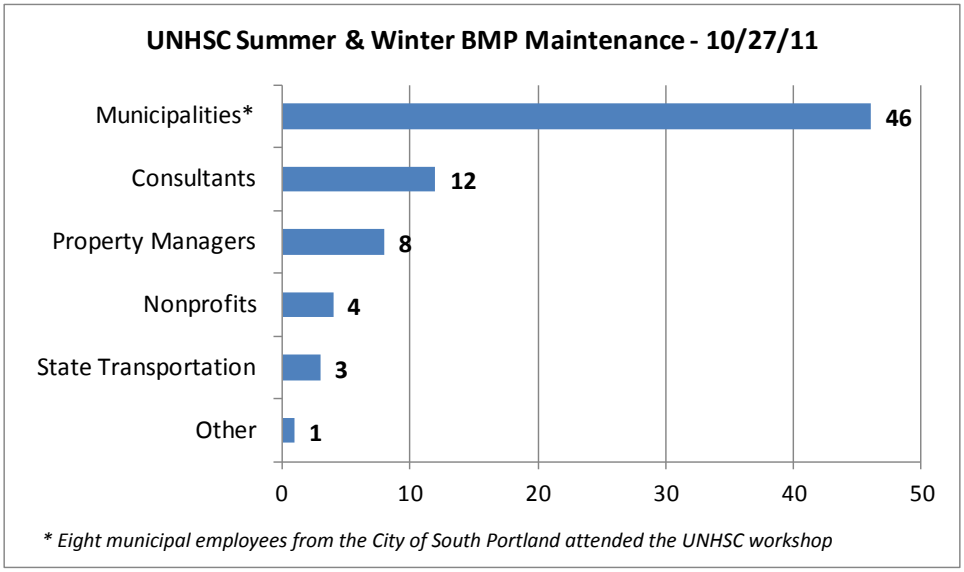



**Figure 11:** Attendees at October 2011 the UNHSC Summer & Winter Maintenance Workshop

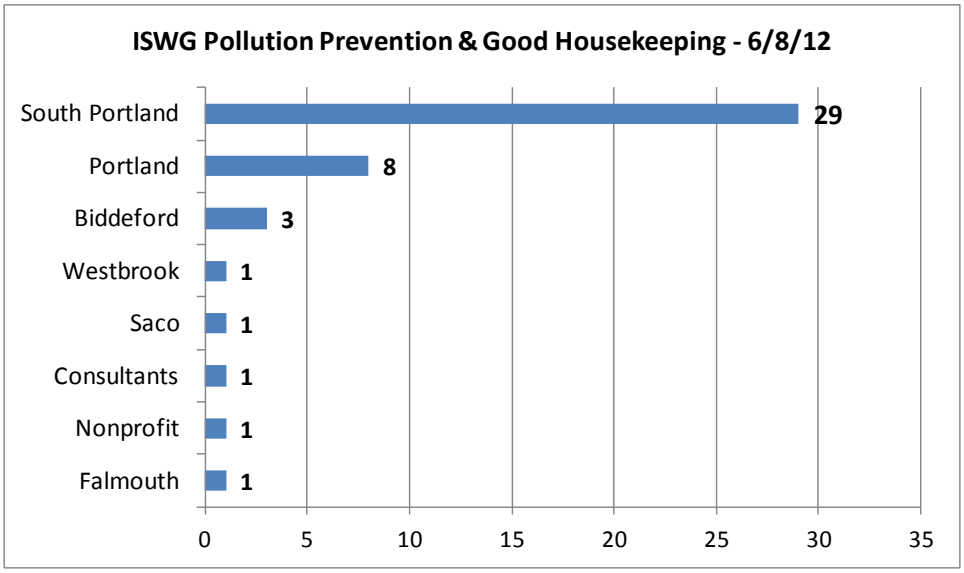



**Figure 12:** Attendees at ISWG Pollution Prevention & Good Housekeeping Workshop

## *BMP 6.3 Continue Implementation of Street Sweeping Program*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To continue (and refine as needed) the City's ongoing pavement sweeping program for all municipally

owned or operated streets and parking areas.

**METHODOLOGY**

Annually assess the effectiveness of the City's ongoing pavement sweeping program and refine as needed based on the latest research and available funding.

*City street sweeper in early spring 2012 (April 2012)*

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 6.3.1*** – continue or modify as needed the City's ongoing pavement sweeping program for all municipally owned or operated streets and parking areas and ensure that sweeping is conducted at least once a year as soon as possible after snowmelt.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its ongoing sweeping program for all municipally owned or operated streets and parking areas. With the purchase of a new regenerative air sweeper in August 2011, we expect the capture rate of fine particulates in street sweepings to increase appreciably thereby resulting in greater pollutant removal. The City also continued with a more intensive sweeping regimen in the Long Creek watershed to support restoration efforts there. We conducted sweeping twice annually – once shortly after final leaf drop in the fall of 2011 and once shortly after final snow melt in the late winter / early spring of 2012. In conjunction with the Long Creek Watershed Management District, we have not yet determined whether more frequent quarterly sweeping for "hotspot" areas is warranted but will likely develop a methodology to identify these areas. Therefore, the goal associated with this BMP has been completed successfully as required.

## *BMP 6.4 Continue Cleaning of Stormwater Structures Including Catch Basins*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To ensure that all municipally owned or operated stormwater structures and catch basins are properly functioning and maintained and that the materials removed from them are disposed of appropriately per applicable state law.

**METHODOLOGY**

Conduct annual cleaning activities for stormwater structures and catch basins to ensure their proper functioning and dispose of associated materials appropriately.

**PERMIT YEAR 4 MEASURABLE GOALS**

***Measurable Goal 6.4.1*** – continue or modify as needed the City's ongoing stormwater structure and catch basin cleaning program with cleaning frequencies determined by sediment accumulation rates. At a minimum, all stormwater structures and catch basins should be cleaned every other year. Stormwater structures and catch basins will be cleaned more frequently if inspections indicate excessive sediment accumulation (i.e., when the sump is greater than or equal to 50 percent filled).

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its ongoing cleaning program for all municipally owned or operated stormwater infrastructure and catch basins, which amounts to just over 2,800 structures. We continued to use a computerized recordkeeping system to track operational costs for catch basin cleaning on a watershed basis. This system collects data for labor hours, fuel consumption and tons of grit removed (Table 5). For the 2011-12 permit year, nearly 2,000 City-owned catch basins were cleaned and approximately 355 tons of material were removed and disposed of at Commercial Recycling in Scarborough.[1] The total operational cost to complete this work was $33,000 and the approximate cost to clean each catch basin was just under $17. We are continuing to develop a method to track maintenance and capital replacement expenses to identify the full cleaning cost for catch basins on a watershed basis. Therefore, the goal associated with this BMP has been completed successfully as required.

**Table 5:** summary of catch basin cleaning activities and associated operational costs for PY2011-12

| Watershed | Total CBs | CBs Cleaned | % Complete | Labor Hours | Fuel Use (Gallons) | Grit Tons | Grit Tons / CB | Approx. Ops. Cost | Labor Hrs/Ton | Gallons Fuel/Ton | Ops Cost $/Ton | $/CB Cleaned |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthoine Creek | 206 | 104 | 50% | 27 | 40 | 58 | 0.56 | $3,720 | 0.46 | 0.69 | $64.08 | $35.77 |
| Barberry Creek | 228 | 170 | 75% | 21 | 28 | 14 | 0.08 | $1,367 | 1.45 | 1.94 | $95.78 | $8.04 |
| Breakwater | 309 | 257 | 83% | 78 | 73 | 28 | 0.11 | $3,794 | 2.75 | 2.58 | $133.57 | $14.76 |
| Calvary Pond | 364 | 277 | 76% | 68 | 86 | 48 | 0.17 | $4,514 | 1.40 | 1.79 | $93.86 | $16.29 |
| Clarks Pond | 113 | 84 | 74% | 8 | 9 | 8 | 0.10 | $647 | 0.99 | 1.12 | $80.16 | $7.70 |
| Danforth Cove | 20 | 17 | 85% | 4 | 6 | 3 | 0.20 | $297 | 1.18 | 1.78 | $87.76 | $17.45 |
| Fore River | 24 | 0 | 0% | - | - | - | - | - | - | - | - | - |
| Gamblers Arm Bk | 222 | 181 | 82% | 44 | 51 | 55 | 0.30 | $4,096 | 0.80 | 0.92 | $74.29 | $22.63 |
| Kimball Brook | 43 | 23 | 53% | 10 | 12 | 6 | 0.27 | $612 | 1.51 | 1.90 | $97.12 | $26.60 |
| Long Creek | 374 | 313 | 84% | 64 | 296 | 31 | 0.10 | $4,277 | 2.08 | 9.70 | $140.22 | $13.66 |
| Long Creek Lower | 7 | 6 | 86% | 3 | 6 | 3 | 0.55 | $266 | 0.90 | 1.80 | $80.15 | $44.35 |
| Mill Creek | 183 | 0 | 0% | - | - | - | - | - | - | - | - | - |
| Nonesuch River | 114 | 90 | 79% | 23 | 29 | 24 | 0.27 | $1,942 | 0.96 | 1.17 | $79.47 | $21.58 |
| Red Brook | 37 | 0 | 0% | - | - | - | - | - | - | - | - | - |
| Trout Brook | 164 | 121 | 74% | 34 | 24 | 17 | 0.14 | $1,851 | 2.00 | 1.41 | $109.01 | $15.30 |
| Turners Island | 287 | 246 | 86% | 46 | 63 | 27 | 0.11 | $2,809 | 1.67 | 2.31 | $102.92 | $11.42 |
| Willard Beach | 139 | 87 | 63% | 45 | 51 | 31 | 0.35 | $2,921 | 1.46 | 1.65 | $95.05 | $33.57 |
| **Totals:** | **2834** | **1976** | **69.7%** | **473** | **773** | **355** | **0.18** | **$33,111** | **1.33** | **2.18** | **$93.28** | **$16.76** |
| | | | (1976/2834) | | | | (355/1976) | | (473/355) | (773/355) | (33111/355) | (33111/1976) |

* Assumes $27.50 hourly labor rate; $3.50 / gal fuel cost; and $49 / ton grit disposal cost. DOES NOT include maintenance or equipment replacement costs.

[1] On a calendar year basis, the City is generally able to clean all publicly-owned catch basins.

## *BMP 6.5 Continue Maintenance and Upgrade of Stormwater Conveyances and Outfalls*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To ensure that all municipally owned or operated stormwater conveyances and outfalls are properly functioning and maintained.

**METHODOLOGY**

Conduct ongoing annual inspection and maintenance program to identify condition of stormwater conveyances and outfalls and repair, replace or install new infrastructure as needed.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 6.5.2*** – continue to maintain and upgrade conveyances, structures and outfalls of MS4 system through general maintenance, repairs and new construction and as part of the combined sewer system separation program. Additionally, evaluate and implement a prioritized schedule, as necessary, for repairing or upgrading the conveyances, structures and outfalls of the MS4.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

The City continued its ongoing inspection and maintenance program for stormwater conveyances. Excluding equipment replacement and maintenance costs (which are likely considerable), the City spent nearly $80,000 – or 44% of the total construction program budget – on a variety of stormwater system repair and replacement activities for the 2011-12 permit year. Examples include catch basin replacement, installation of curb inlets, pipe repair, installation of new storm drain structures, replacement of rip rap, and drainage ditch maintenance, among many others. We will continue to refine our cost accounting systems to more accurately reflect actual expenditures for the City's stormwater program. The City is also investigating the use of a GIS-integrated asset management program that will assist in prioritizing infrastructure repair and replacement projects. As a result of these extensive activities, the goal associated with this BMP has been completed successfully as required.

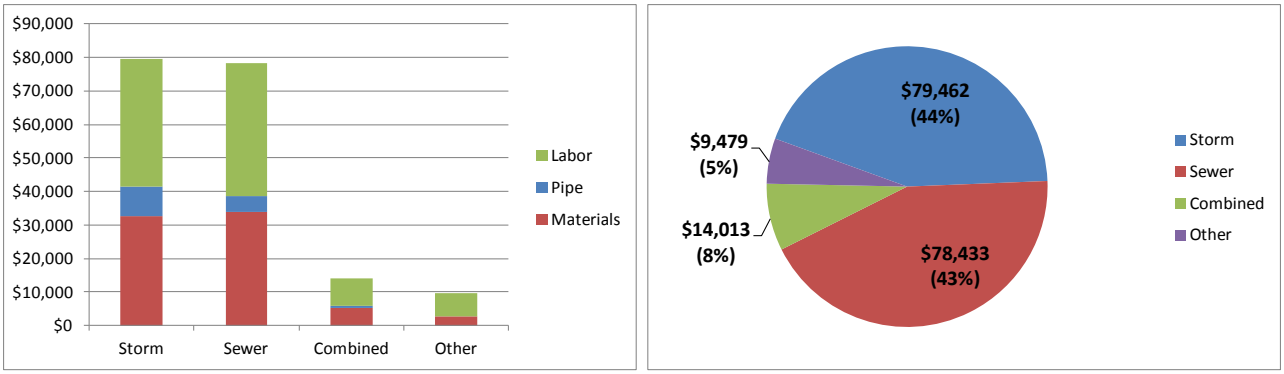



**Figure 13:** construction program expenses (excluding eq. replacement & maint. costs) for PY2011-12.

## *BMP 6.6 Continue Implementation of Stormwater Pollution Prevention Plans (SWPPPs)*

*Responsible Party: Water Resources Protection* *Additional Party: N/A*

**FUNCTION**

To ensure that all applicable municipal facilities (public works, transfer station, school bus maintenance, etc.) in the urbanized area have current Stormwater Pollution Prevention Plans (SWPPP).

**METHODOLOGY**

Conduct an inventory of applicable municipal facilities to determine which ones need updated or new SWPPPs. Develop SWPPPs for all applicable facilities.

**PERMIT YEAR 4 MEASURABLE GOALS**

- ***Measurable Goal 6.6.2*** – continue to implement SWPPPs for each applicable facility (e.g., public works, school bus maintenance and transfer station) and collaborate with DEP to establish a training program for municipal facility staff to keep them adequately informed of SWPPP requirements on an ongoing basis.

**ACTIONS COMPLETED DURING PERMIT YEAR 4**

SWPPPs have been developed for the public works facilities, school bus maintenance garage and transfer station. As described above, City staff from each facility attended pollution prevention and good housekeeping training held in June of 2012. Facility-specific training will also be provided to all relevant municipal staff in the fall of 2012. Following this training, each SWPPP will be reviewed and revised as needed to reflect any changes or updates to facility operations. Therefore, the goal associated with this BMP has been completed successfully as intended.

# APPENDICES

# Appendix 1: Interlocal Stormwater Working Group Permit Year 4 Summary of Minimum Control Measure 1 – Stormwater Awareness Plan Implementation

**Stormwater Awareness Plan Implementation**

| Outreach Tool | Status | Details | |
|---|---|---|---|
| ***Exposure*** - to be in compliance, implement A1 and one additional activity (A2, A3, A4 or A6). | | | |
| A1 - Run the Ducky II ad for 3 weeks | incomplete | This task was completed in PY3, as previously approved by Maine DEP. | |
| A2 - Distribute posters at municipal offices, libraries, local hotspots (coffee/sandwich shops) | complete | A total of 275 stormwater-related posters were displayed in local establishments in the 14 ISWG communities. | |
| A5 - Ducky ad + *After the Storm*, a video co-produced by EPA & the Weather Channel on local cable access stations | complete | Each ISWG community's public access television station was provided with a copy of the Ducky II ad as well as a copy of *After the Storm*. The following information was received from the stations regarding air play: | |
| | | Biddeford | No data provided |
| | | Cape Elizabeth | *After the Storm* aired daily at 12:00 p.m. and 6:00 p.m. in April and May. |
| | | Cumberland | No data provided |
| | | Falmouth | No data provided |
| | | Freeport | No data provided |
| | | Gorham | *After the Storm* and the Ducky ad aired; unable to provide estimate of frequency. |
| | | Old Orchard Beach | *After the Storm* and the Ducky ad aired; unable to provide estimate of frequency. |
| | | Portland | *After the Storm* was aired three times per week in April and May; the Ducky ad plays frequently between programming. |
| | | Saco | No data provided |
| | | Scarborough | No data provided |
| | | South Portland | *After the Storm* and the Ducky ad ran frequently between programs. |
| | | Westbrook | *After the Storm* and the Ducky ad aired; unable to provide estimate of frequency. |
| | | Windham | No data provided |
| | | Yarmouth | *After the Storm* and the Ducky ad played frequently throughout the day |

| | | |
|---|---|---|
| ***Retention*** - to be in compliance, implement B1 & B4 and one additional activity (B2, B3 or B5). | | |
| B1 - Prominent links established on municipal and partner websites | complete | All websites for ISWG communities feature a link to www.thinkbluemaine.org. |
| B2 - Article in local newspaper and/or town newsletter | complete | A press release about stormwater and the *Urban Runoff* 5k was submitted to the following publications: *Forecaster* (all editions; covers Cape Elizabeth, Cumberland, Falmouth, Freeport, Portland, Scarborough, South Portland &Yarmouth), *Portland Daily Sun* (Portland), *Independent* (Windham), *American Journal* (Gorham & Westbrook), *Courier* (Biddeford, Saco & OOB), *Portland Press Herald*<br>The article ran in all editions of the *Forecaster* (April 11, 2012) |
| | | *Portland Press Herald:* Maine Voices: Rainy days bring gloomy thoughts about impact on Casco Bay (May 8, 2012) |

| | | |
|---|---|---|
| B4 - Purchased ad space - 3 week duration | complete with modification | With approval from Maine DEP, ISWG chose to utilize online advertising in lieu of print ads. Online ads that directed viewers to www.thinkbluemaine.org ran on news and outdoor-focused websites in all ISWG communities for the months of March, April and May.<br><br>Using Time Warner Cable's online ad service, ISWG was able to specifically market to our specific target audience (homeowners, aged 35-55) primarily within the ISWG communities (residents of outlying communities potentially saw the ads as well).<br><br>According to the summary report provided by Time Warner Cable, the ads were seen by our target audience more than 600,000 times and had a "click through rate" (the number of times the ads were clicked) of 0.06%. ISWG's click through rate was higher than the industry average of 0.04%.<br><br>While the ads reportedly reached the target audience, and our audience clicked on the ads, the Think Blue Maine website did not experience a noticeable increase in hits. The tracking software used on www.thinkbluemaine.org allows us to track where the web hits originate. Information from the tracking software indicates that the audience visiting the website during the months of March through May was made up of primarily homeowners and "regular" citizens. In the months preceding the web ad campaign, those viewing the website were typically stormwater managers from Maine and elsewhere. |

| ***Acceptance*** - to be in compliance, implement C1 and one additional activity (C2, C3, C4 or C5). | | |
|---|---|---|
| C1 - Email newsletter/blurb to municipal employees (including school department), university employees, etc. | complete | An email promoting the *Urban Runoff* and *Green Neighbor Family Fest* was sent to all employees[2] in ISWG. The email included information about stormwater, as well as promoting the events. |
| C2 – Informational materials developed as part of awareness tool distributed in each ISWG community. | complete | General stormwater information was distributed throughout priority neighborhoods in each ISWG community. The following number of households received information: |
| | | Biddeford: 122 |
| | | Cape Elizabeth: 79 |
| | | Cumberland: 112 |
| | | Falmouth: 95 |
| | | Freeport: 64 |
| | | Gorham: 68 |
| | | Old Orchard Beach: 79 |
| | | Portland: 1297 |
| | | Saco: 111 |
| | | Scarborough: 110 |
| | | South Portland: 86 |

[2] The City of South Portland was unable to distribute the email to all municipal staff. A stormwater-related article was included in a municipal newsletter.

| | | |
|---|---|---|
| | | Westbrook: 111 |
| | | Windham: 96 |
| | | Yarmouth: 61 |

## Best Management Practices Adoption Plan Implementation

| Task | Status | Details |
|---|---|---|
| ***Reporting*** | | |
| Summarize plan implementation to date | complete | |

***Point of Sale***

| | | |
|---|---|---|
| Retain 19 Point of Sale locations in the ISWG communities. | complete | Two additional Point of Sale locations joined the program in the spring of 2012 (one in Old Orchard Beach and one in Windham), bringing the total number of stores participating in the program to 21. The distribution of the stores is as follows: |
| | | Biddeford: 0 |
| | | Cape Elizabeth: 0 |
| | | Cumberland: 1 |
| | | Falmouth: 2 |
| | | Freeport: 1 |
| | | Gorham: 2 |
| | | Old Orchard Beach: 1 |
| | | Portland: 2 |
| | | Saco: 1 |
| | | Scarborough: 2 |
| | | South Portland: 3 |
| | | Westbrook: 1 |
| | | Windham: 2 |
| | | Yarmouth: 3 |

***Adult Education***

| | | |
|---|---|---|
| Offer a minimum of six adult education classes per year | complete | Windham: 8/24/2011, 3 participants |
| | | Portland: 9/8/2011, 7 participants |
| | | Gorham: 9/15/2011, YardScaping class offered by Cooperative Extension, 13 participants |
| | | Windham: 10/12/2011, Youth YardScaping teacher training, 4 participants |
| | | Falmouth: 4/14/2012, 49 participants |
| | | Windham: 5/5/2012, Blue Seal open house 25 participants |
| | | Falmouth: 6/17/2012, Falmouth Middle School Youth YardScaping presentation, 42 participants |
| Promote adult education classes | complete | Press releases publicizing the available classes were submitted to local publications, additional information was published in local adult education brochures, via direct mail, using social network websites, and through host locations. |

| | | |
|---|---|---|
| Track behavior change | complete | CCSWCD staff documented class evaluations and contacted past adult education class participants to determine which YardScaping practices were implemented. Please see summary of behavior change reported by participants of PY3 classes, as well as those practices participants of PY4 classes intend to implement, below. |

***Targeted Information Distribution***

| | | |
|---|---|---|
| Distribute information to priority neighborhoods (minimum of 50-100 households in size) in each ISWG community. | complete | YardScaping information was distributed throughout priority neighborhoods in each ISWG community. The following number of households received information: |
| | | Biddeford: 122 |
| | | Cape Elizabeth: 79 |
| | | Cumberland: 112 |
| | | Falmouth: 95 |
| | | Freeport: 64 |
| | | Gorham: 68 |
| | | Old Orchard Beach: 79 |
| | | Portland: 1297 |
| | | Saco: 111 |
| | | Scarborough: 110 |
| | | South Portland: 86 |
| | | Westbrook: 111 |
| | | Windham: 96 |
| | | Yarmouth: 61 |
| Distribute YardScaping information to local establishments (e.g. pet stores, veterinarian offices, pediatrician offices) | incomplete | With approval from Maine DEP, this task was removed from ISWG's BMP Adoption Plan. |

***Websites & Free Media***

| | | |
|---|---|---|
| Maintain CCSWCD YardScaping website | complete | CCSWCD maintained the YardScaping website and tracked hits. Increased hits were seen after targeted neighborhood outreach efforts, public events, and adult education presentations. |
| Newspaper coverage of YardScaping activities and healthy lawn care | complete | *Portland Press Herald:* Give them an inch, they'll take your yard (July 24, 2011) |
| | | *Portland Press Herald:* Maine Gardener: Gorgeous and hardy: The garden of the future? (October 23, 2011) |
| | | *Portland Press Herald:* Maine Gardener: Reviving a lawn requires more than good seed and frequent watering (May 13, 2012) |
| | | *Portland Press Herald:* Earth-friendly demo gardens to open on Back Cove (June 5, 2012) |
| | | *Portland Press Herald:* Portland gardens show how to nurture nature naturally (June 11, 2012) |

***Neighborhood YardScape Socials***

| | | |
|---|---|---|
| Hold a minimum of zero neighborhood socials in the ISWG communities | complete | One neighborhood social was held in Windham. Three people participated. |

***Adult Education*** – Behavior Change Tracking

During the fall of 2011, CCSWCD staff made follow up phone calls with participants of YardScaping adult education classes held in the fall of 2010 and spring of 2011 (PY3 who provided their contact information on class evaluations in order to determine the level of follow through of the YardScaping practices class participants intended to use). As expected, it was difficult to reach people, but the information gleaned from those who were reached provided an anticipated rate of compliance for the YardScaping practices that class participants intended to implement.

| Follow up phone calls from Permit Year 3 YardScaping Classes | | | |
|---|---|---|---|
| **Lawn Care Practice** | **Plan to implement** | **Implemented practice** | **% behavior change** |
| Set Mower to a height of 3" | 6 | 6 | 100% |
| Leave grass clippings | 6 | 6 | 100% |
| Sharpen mower blades | 4 | 2 | 50.0% |
| Aerate | 15 | 10 | 66.7% |
| Topdress | 17 | 10 | 58.8% |
| Overseed | 13 | 10 | 76.9% |
| Use low maintenance seed | 14 | 10 | 71.4% |
| Get a soil test | 13 | 8 | 61.5% |
| Use nitrogen-only fertilizer | 13 | 10 | 76.9% |
| Use compost tea | 14 | 6 | 42.8% |

Follow up phone calls are made six months to a year after the class to allow participants a growing season to implement the recommended practices. Below are the results of the Permit Year 4 post-class evaluations completed by the YardScaping class participants.

| Permit Year 4 YardScaping Post-Class Evaluations | | | |
|---|---|---|---|
| **Lawn Care Practice** | **Plan to implement** | **Currently do not implement** | **% planning to implement** |
| Set Mower to a height of 3" | 17 | 17 | 100.0% |
| Leave grass clippings | 3 | 4 | 75.0% |
| Sharpen mower blades | 12 | 13 | 92.3% |
| Aerate | 21 | 25 | 84.0% |
| Topdress | 20 | 22 | 90.9% |
| Overseed | 19 | 22 | 86.4% |
| Use low maintenance seed | 21 | 24 | 87.5% |
| Get a soil test | 18 | 23 | 78.3% |
| Use nitrogen-only fertilizer | 11 | 19 | 57.9% |
| Use compost tea | 18 | 24 | 75.0% |

CCSWCD staff will contact the class participants from the Permit Year 4 classes in the fall of 2012 to determine which behaviors have been adopted.

**Summary: ISWG Youth Education Activities**

**Cape Elizabeth**

Total students: 135

Total contact hours: 127
Lesson topics: Nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; tour of Portland Water District facilities.
Schools: Pond Cove Elementary School, Cape Elizabeth High School
Educator: PWD

**Cumberland**
Total students: 153
Total contact hours: 409.5
Lesson topics: Nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; Envirothon**.
Schools: Greely Middle School, Greely High School
Educator: PWD, CCSWCD
Note: CCSWCD worked with the Cumberland Shellfish Conservation Commission to provide guidance about stormdrain stenciling projects.

**Falmouth**
Total students: 169
Total contact hours: 2,087
Lesson topics: Youth YardScaping program (see description below); Forestry & connection to water; topography, watershed characteristics, stormwater pollution, water quality testing, and cumulative impact; water cycle and water conservation; nonpoint source pollution and behavior change; long-term experiments and independent research projects about watersheds, nonpoint source pollution, and environmentally responsible lawn care, and students presented their research to a public audience.
Schools: Falmouth Middle School
Educator: CCSWCD, PWD

**Gorham**
Total students: 178
Total contact hours: 359
Lesson topics: Nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; water quality and macroinvertebrate sampling; soil characteristics and testing, how soil pollutes water and best management practices.
Schools: Gorham Middle School
Educator: CCSWCD, PWD

**Portland**
Total students: 277
Total contact hours: 350
Lesson topics: Nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; Southern Maine Children's Water Festival*; Envirothon**.
Schools: Lincoln Middle School, Waynflete School, St. Brigid's School, East End School, King Middle School, Casco Bay High School, Lyseth Elementary School
Educator: PWD, CCSWCD

**Scarborough**
Total students: 134
Total contact hours: 252
Lesson topics: Nonpoint source pollution, human impact, stormwater; Southern Maine Children's Water Festival*.
School: Scarborough High School, Scarborough Middle school
Educator: PWD, CCSWCD

**South Portland**
Total students: 659
Total contact hours: 1,328
Lesson topics: Pond Study Field Day to study pond life and water quality, including macroinvertebrate sampling and identification (bioassessment); nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; Southern Maine Children's Water Festival*.
Schools: Small Elementary School, Dyer Elementary School, Mahoney Middle School, Greater Portland Christian School, Skillin Elementary School, Kaler Elementary School, Southern Maine Community College
Educator: CCSWCD, PWD

**Westbrook**
Total students: 59
Total contact hours: 92
Lesson topics**:** Nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change; Envirothon**.
Schools: Westbrook Middle School, Westbrook High School
Educator: PWD, CCSWCD

**Windham**
Total students: 304
Total contact hours: 1,643
Lesson topics: Third year of "Ecocentricity" event where high school students taught in-field lessons to middle school students about water, including stormwater, water cycle, watersheds, wastewater, soil/geology, water quality parameters & testing, wastewater, and ecology; nonpoint source pollution, human impact, watershed characteristics, stormwater, low impact development, and behavior change.
Schools: Windham High School, Windham Middle School, Windham Adult Education
Educator: CCSWCD, PWD

**Yarmouth**
Total students: 21
Total contact hours: 63
Lesson topics: Stormwater, water flow, and storm drain information as introduction to storm drain stenciling event
Group: Yarmouth Teen Trek Camp
Educator: CCSWCD

* The **Southern Maine Children's Water Festival** is a one-day event occurs that annually each May, drawing about 600 middle school students from all over Southern Maine to learn about different aspects of water. Students participate in classroom presentations, a stage show about ecology , "Dripial Pursuit" competitions, and exhibit hall activities. The Festival's focus is on water, ecosystems, nonpoint source pollution, and ways that students can be part of the solution.

** The **Envirothon** is an environmental competition conducted throughout Maine each spring. High school students test their knowledge of natural resources and current environmental issues in an outdoor setting. Teams of three to five students are tested at five stations: Wildlife, Aquatics, Forestry, Soils, and a Current Natural Resources Issue. The top three teams at each regional competition compete in the State competition, with the advancement to a national competition for top-placing teams.

**Educator contact information**
**CCSWCD**: Sarah Plummer, Education Coordinator, Cumberland County Soil & Water Conservation District, sarah-plummer@cumberlandswcd.org, 207-892-4700 x 107

**PWD**: Lynne Richard, Education Coordinator, Portland Water District, lrichard@pwd.org, 207-774-5961 x 3324

**Youth YardScaping Program**
This year marked the third year of Falmouth Middle School's participation in the Youth YardScaping program, which has proven effective at increasing awareness of local stormwater issues and changing lawn care behaviors.

In this program, clean water lessons are interwoven throughout the year-long science curriculum of two sixth grade classes. Lessons begin with the basics: the water cycle, water movement and watershed characteristics. Students then receive reinforcement of these concepts and begin learning about runoff, nonpoint source pollutants and their impact on water quality.

In the early spring, the program intensifies to focus on one of the largest threats to local water quality: pesticides and fertilizers from lawn care products. Students form a lawn care company and split into groups that research various lawn care techniques and implement the practices on the school's courtyard, including mowing, aerating, topdressing, overseeding, watering, soil testing, fertilizing, brewing and applying compost tea and controlling weeds and bugs. Other groups are dedicated to researching background topics like the soil food web, watersheds and nonpoint source pollution. Both classes also participate in long-term experiments to test the effects of different fertilizers and pesticides on a water quality ecosystem and use the experiment as part of their research.

Students present their research and demonstrate their practices at a public presentation, which has been attended by approximately 40 to 50 people annually, including parents, members of Falmouth's Conservation Commission and University of Maine Cooperative Extension's Master Gardener Program, as well as school administrators. In 2012, both the Superintendent and Principal of Falmouth Middle School attended the presentations and endorsed the program afterwards. In 2012, a public exhibit component was added after the presentation. Students set up their displays in the school library, giving the audience an opportunity to look at their visual displays and ask questions of the lawn care "experts." This was also well attended, and many attendees also discussed healthy lawn care techniques with CCSWCD staff and took YardScaping fact sheets provided by CCSWCD.

Both anecdotal evidence and written surveys completed by the students demonstrate the success of the Youth YardScaping program at increasing awareness of stormwater, runoff and water quality, and changing lawn care behaviors of the students' parents (part of the target audience laid out in ISWG's BMP adoption plan). In addition, the program is successful at imparting other transferrable life skills, such as public speaking, working both in groups and independently, completing self-directed research projects, preparing displays and notecards and seeking and preparing research from various sources.

Several parents of children who participated in the program two years ago had children participate again in 2012. Some shared they had changed their lawn care practices as a result of their first child's participation. One family decided to stop using a popular lawn care service, while another changed their practices out of concern for the health impacts to their dog.

Students have completed written surveys each year of the program, at the beginning and end of the school year. These surveys demonstrate increased awareness of nonpoint source pollutants, stormwater, runoff and ways to improve water quality. Surveys also indicate students are learning a great deal about how lawn care products and practices relate to water quality, and are thinking critically about environmental issues and their ability to make an impact.

Below are some responses to student survey questions. These responses have only been edited for spelling; otherwise, these responses are verbatim. One student response from an open-ended question sums the experience up well:

*… I thought it [the Youth YardScaping Program] was valuable because now we know what we can do to stop polluting our local bodies of water. We can also stop putting bad chemicals in the water and our lawns. I thought that it was one of the most valuable things we learned in this school year.*

The most telling question on the survey is "What was the most important thing you learned?" The responses to this question, below, have been organized into topics.

**The "Big Picture"**

- …that your every day practices (like using synthetic herbicides) can harm the environment. We need to be more aware.
- … that just one little thing can make a big impact on our environment whether it be good or bad.
- I learned that what we put on our lawns <u>really</u> effects our environment. Like with eutrophication. And that if your dog rolls around in our lawn when you have stuff on it, they can get sick.
- …demonstrating how other people can have great lawns while helping the environment.
- …was to think about what you're doing before you do it because it could really harm other things.
- … was how to care for our lawn. All about mowing, watering, fertilizing, pesticides, etc… Also about nonpoint source pollution (cumulative impact) and how I can help.
- …about nonpoint source pollution and cumulative impact.

**Fertilizer**

- …that every fertilizer has an effect on the environment.
- …was how easy it is to buy way too much fertilizer.
- …you should only fertilized if you have to (it is a last resort).
- …that fertilizer is a last resort. There are a lot of other options before fertilizing like using compost tea, leaving your grass clippings on your lawn, and you can also aerate.
- That using pesticides and fertilizers on your lawn can harm a lot around the environment.

**Pesticides**

- … that pesticides are bad for the environment. I thought this was important because pesticides kill more than just the pests they also kill more important things.
- …that pesticides are bad for you and the environment. Kids can get brain damage and dogs can get diseases.
- …just because a pesticide is organic does <u>NOT</u> mean it is safe.

**Other practices**

- That you can have a big effect on the environment if you soil test.
- I learned how to take care of lawns the healthy way. Now at home, I can: have my step-dad mow, then I topdress, then overseed, then compost tea. And it will look healthy.
- …that compost tea is a lot better and more environmentally friendly for your lawn than fertilizer.

In addition, responses to various survey questions demonstrate students' acquisition of other important life skills:

**Public speaking/teaching**

- … we knew what eutrophication was, and we were able to tell other people about it, and make them aware of what they're doing when they use synthetic fertilizer and pesticides.
- I enjoyed the presenting part of the Yardscaping project the most because I thought it was really cool to teach people about the environment and how to keep it healthy.
- … and even though I was very nervous I enjoyed talking in front of parents, because I felt like I was informing them.

- I really enjoyed being in front of everyone and teaching them how to get rid of their weeds in a safe, natural way.
- I really enjoyed presenting. I have always been a fan of giving speeches and it felt good to show everyone what I had learned.
- I really enjoyed begin able to show what I learned and to listen to what other people learned.

**Group work/peer learning**

- Working in small groups can be challenging.
- I really enjoyed the presentations, because even though you didn't study that topic, you got to get some knowledge from them.

Lastly, the surveys indicate students are sharing information with others and changing their family's lawn care practices. Students shared or planned to share their lawn care knowledge with various people, including parents, siblings, extended family, neighbors, and friends.

When asked what information they had shared or would share, they responded:

- What we all did, how to do it, why we did it, and how it affects our community.
- How fertilizing is a last resort and that my dad should leave the grass clippings down.
- We have a lake house and we cannot use fertilizer so I told her [mother] about compost tea because it wouldn't cause eutrophication.
- Pesticides can be very harmful to the environment and to humans.
- That it is important to soil test before fertilizing.
- I talked about the [watering] guidelines and root growth.
- I shared information on grubs and ants.

When asked what practices they were doing or planned to do as a result of the program, responses included:

- I made compost tea for my lawn, used the organic weed killer, and my dad was top dressing our lawn the day after [the presentation].
- If, at some time my house needs topdressing, I'm sure I'll have the knowledge to do so. Although my lawn is big, it'll be very healthy.
- We are going to start using compost tea at our lake house because you cannot use fertilizer.
- … when we mow, we will remember to not go lower than 3 inches.
- We are leaving the grass clippings for a natural fertilizer. My mom thought it was a great idea.
- I will try using a different sprinkler on my lawn, because with the sprinkler we have now it evaporates and doesn't get to a lot of the plants and soil.
- Watering 65 min. at 4:00 a.m. in the morning with rotary impulse sprinkler.
- … I am leaving the grass clippings on my lawn when I mow it.
- I will be checking to see if we have a grub problem, if ants are naturally aerating our lawn, and see if any ants are getting into our house.
- My mom has decided to use the grub removal trick that was shown in the presentation.
- … I am thinking about renting an aerator for our neighborhood.

Seventh and eighth grade students who participated in the program in 2010 and 2011 completed follow up surveys in 2012 to determine retention of information and behavior change. Results varied between the two groups. Although results indicate both groups retained information and demonstrated behavior change, the 2010 group retained more and changed more behaviors. This is most likely because in 2010, both sixth grade science classes focused only on the Youth YardScaping (YY) curriculum. In 2011, three sixth grade science classes took part in a larger project where each class focused on three separate topics: watershed stakeholders, Youth YardScaping, and

forestry. Analysis of the follow up surveys shows that it is more effective to focus science classes on the YY project instead of focusing on several different, although related, topics.

Still, former students from both years retained much of their knowledge of water quality. Students were asked to list the main sources of water pollution:

- Students from 2010 class: 100% recalled one or more specific nonpoint source pollutants covered in the YY program, such as pesticides, phosphorus, human activity, lawn care products, animal, dog, and human wastes, fertilizer, soil, runoff, and chemical, while rarely listing other nonpoint source pollutants such as oil, gasoline, and trash.
- Students from 2011 class: 66% recalled one or more specific nonpoint source pollutants covered in the YY program with oil, gasoline, and trash listed in half of all student responses.

When asked, "What is the most effective way to keep pollutants out of our water?" student responses included:

- Not put chemicals on your lawn.
- Use products that won't harm the environment if it does go into the water.
- Don't spray plants with harmful spray.
- Use all natural things to keep things away. Don't spray what can be harmful to fish and marine life on your lawn.
- Watch runoff and chemicals getting into rivers. Pick up waste/animal waste.
- Use healthy lawn care products that won't pollute water.
- Use safe lawn care products.

Students from the 2010 and 2011 classes also recalled the names of lawn care practices used in the YY curriculum. Seventy nine percent of students from the 2010 class and 61% percent of students from the 2011 class recalled specific names of practices their group did not research, including aerating, topdressing, mowing, watering, soil testing, overseeding, compost tea, fertilizing, and pest control.

Results from the surveys also indicate students and their families are changing lawn care behaviors. Students were asked if they were implementing any of the YardScaping practices at home. In the 2010 group, 63% responded they were, and of that group, 52% were doing so as a result of participation in the school program. Results from the 2011 group indicated 66% of these families were applying YardScaping practices, and of that group, 50% were doing so as a result of the YY program.

Student responses about the practices adopted include:

- Overseeding, aerating.
- We have tried using natural pesticides and other environmental safe fertilizers.
- We water our grass in the morn. and stay away from chemicals.
- We have been watching what we put on our lawn and have been trying to use all natural materials.
- I am doing soil testing as a result of that [YY project].
- Watering so that the plants accurately get water.
- We have been watering our lawn more effectively.
- We are keeping the grass clipping on the lawn sometimes. This gives the grass more nutrients.
- [My mom]… now uses these [practices] when needing to – cornmeal and rubbing alcohol to kill ants.
- My mom topdresses and we don't mow so low anymore.

Below are more questions and sample responses from students who participated in 2010 and 2011, and some sample responses.

**"Have you encountered any challenges or successes when doing any of the practices? Please share."**

- Yes, we aerated and the grass grew thicker.

- They [natural pesticides & environmentally safe fertilizers] worked well on our yard.
- Success – our grass is greener and more thick/healthy.
- The plants are growing better as a result [of proper watering].
- Yes, our lawn is much greener.

**"Have you shared any of your knowledge of YardScaping practices with anyone since you did the Youth YardScaping project? If yes, whom did you share it with and what did you share?"**

- I shared it with my grandparents because they have a big yard and never aerated.
- Yes I have. I shared it with one of my neighbors and she is now using their techniques to keep her lawn healthy.

**"What stands out the most about the YardScaping unit from Mrs. Olsen's class?"**

- If you do lots of these procedures on your lawn, you can change the pollutants in the water.
- How we do our gardening and other Yardscaping things can affect other parts of the environment.
- It got us, as a class, outside and doing things. Hands-on activities.
- You don't have to use a whole bunch of chemicals to get a good yard.
- That it was in depth enough so you would know it inside out.
- That if we do something wrong it can effect everything.

**"Please share any other comments about the Youth YardScaping project that will help us determine if it's a worthwhile project."**

- I think this project taught kids and their parents how to keep a healthy lawn and keep pollution out of local watersheds.
- It helps teach better products to use to make your lawn look better and not pollute water.
- I think it helped to embed knowledge by doing and presenting the project.
- The Youth YardScaping project was a fun, educational program. It was fun to learn more about the effect things had on the environment and I think it brought our class closer together.
- It's worthwhile because it teaches kids about things their parents might be doing wrong and help them and the environment.

Results from students that participated in 2012 and have participated over the past two years indicate the success of the program on many levels, and CCSWCD plans to continue the program at Falmouth Middle School and expand the program to one new ISWG community per year.

**Urban Runoff & Green Neighbor Family Fest**

The inaugural *Urban Runoff* 5K race and walk and the *Green Neighbor Family Fest* were held on April 21, 2012. The goal of these events was to raise awareness of stormwater and funds for ISWG's youth education program. With approval from Maine DEP, race and festival served as the Public Involvement and Participation event for all ISWG communities.

By all accounts, the inaugural event was a huge success. A total of 562 runners and walkers registered for the race, and many local businesses supported the race through sponsorships, in-kind donations and employee participation as race participants and volunteers. Approximately 25,000 students in all public K-8 schools in each ISWG community received advertisement of the race and cause. Local media outlets advertised the events, including radio sponsorship during the month of April by 98.9 WCLZ and CCSWCD interviews on Fox's 23 *Good Day Maine* and Time Warner Cable's *Let's Connect*. Online advertising through Facebook was also used to promote the race and cause.

Anecdotes as well as a post-race survey completed by race participants demonstrate the success of the race's planning and implementation. Many participants particularly enjoyed the course, which uniquely features both suburban neighborhood streets as well as about a mile long section of trail in an urban area of Portland. Many survey respondents indicated the cause of the race, clean water education, was a major reason why they chose to participate.

To meet the goal of increasing stormwater awareness, CCSWCD designed and placed signs along the course focused on runoff, pollution, and water movement. These messages were also included on the race website, which at its peak received over 1,500 hits on one day, with an average of 300 hits per day. Stormwater awareness messages were also included in the six eblasts that were sent to all registered participants, sponsors and partners. The 2012 post-race survey did not include questions directly related to increased awareness of stormwater issues but awareness questions will be included in the 2013 post-race survey to gauge the effectiveness of these outreach methods.

The *Green Neighbor Family Fest* was held after the race on the front lawn of Deering High School. The event ran for four hours and was attended by approximately 1,000 people. Scheduled events included the awards ceremony and three child-focused, environmentally-themed live performances, including music, theater and storytelling. A total of 13 exhibits were set up by local nonprofit and governmental organizations, universities and businesses to provide hands-on, educational activities for children. These activities included water quality testing, macroinvertebrates as water quality indicators, a marine touch tank, "poo bag" toss (about proper disposal of pet waste), and many more. Children also took part in face painting and a "Pollution Solution" obstacle course.

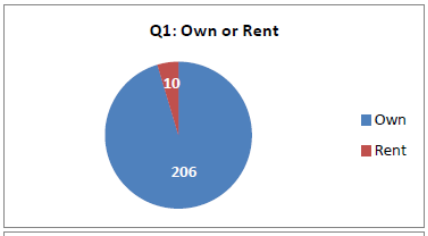
The festival was also a great success. Children were engaged, and parents provided feedback that the activities were not only fun, but also educational for both parents and children.

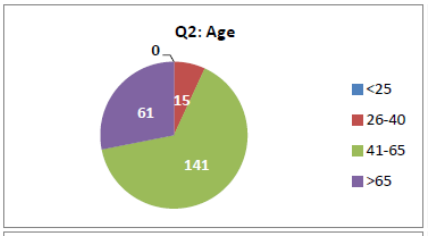
Plans are underway to host the second annual *Urban Runoff* 5K and *Green Neighbor Family Fest* on Saturday, April 20, 2013.

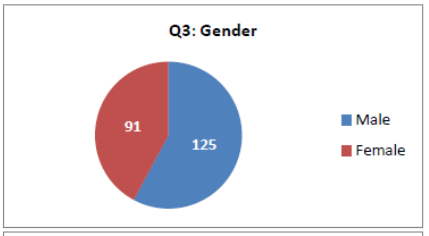
# Appendix 2: Results from October 15, 2011 Household Hazardous Waste Collection Day Questionnaire & Photos

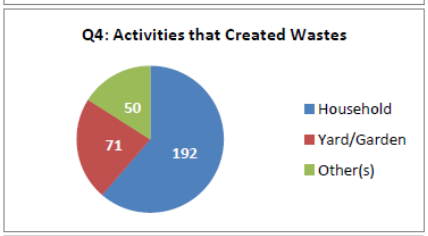
**QUESTIONS**

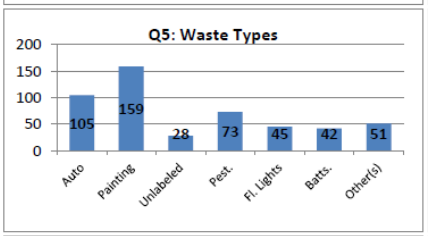
1. Do you own or rent your home? *Vast majority participants (96%) own their homes.*
2. What is your age? *The majority (65%) of participants were 41-65.*
3. Are you male or female? *More men (58%) participated than women (42%).*
4. What types of activities created these wastes? *Household activities were the most common (61%) source for wastes.*
5. Please indicate the types of wastes you dropped off today. *Paints/solvents were the most common (32%) type of HHW.*
6. How long have you had these wastes? *Most wastes (49%) were stored in the home for 1-5 years.*
7. Were any of the wastes in the house when you moved in? *Just over 1/4 of homes had wastes from previous occupants.*
8. Did these wastes come from more than 1 household? *About 10% of participants dropped off HHW for neighbors.*
9. How did you hear about today's event? *Newspapers were the most common (44%) source of info for participants.*
10. Have you participated in the City's previous HHW Collection Days? *53% of attendees participated in previous events.*
11. How much would you be willing to pay for HHW disposal? *About 48% of participants would pay for collection service.*
12. How often would you use a HHW collection event? *58% of participants felt 1 HHW event/one (or more) years was enough.*
13. Are you aware of the following SW management efforts? *About 50% of participants were aware of at least 1 of the efforts listed.*

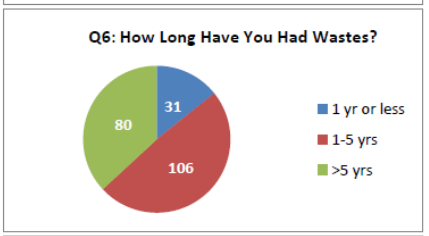


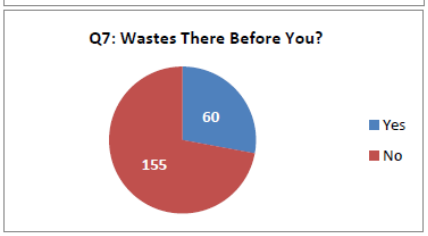



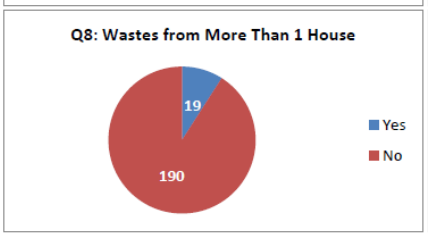



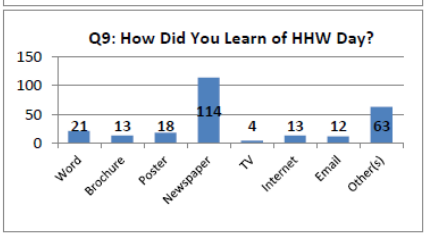



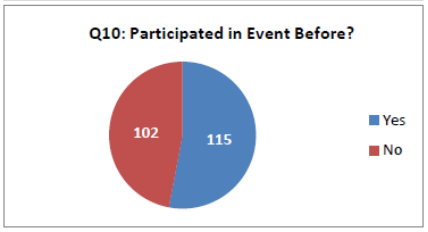



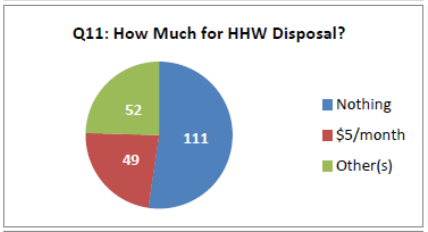



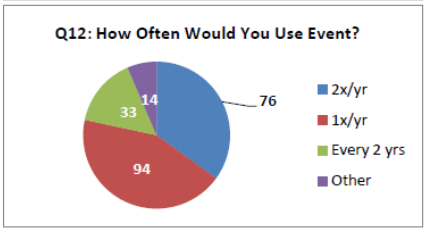



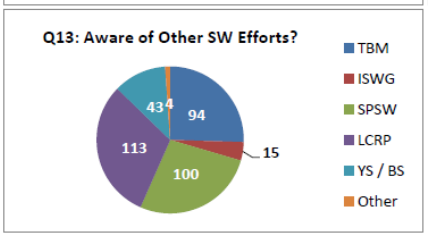



**Vehicles lining up on Waterman Drive prior to opening of front gate**

**An example of the wide variety of household hazardous wastes dropped off by residents**

**Compliance Administrator Tom Wiley greets residents as they arrive to drop off their HHWs**

**Plant Operator Pierre Corbeau assists residents with HHW drop off**

**A birds-eye view of the HHW processing operation**


**Clean Harbors staff members process HHW as residents drop it off**

**Paints were the most common waste item dropped off by residents**

**Automotive fluids being poured into 55 gallon drums for secure shipment to Clean Harbor processing facility**

**Full 55 gallon drums of auto fluids**

**A variety of HHWs being processed by Clean Harbors staff**

**Fluorescent lights placed in a secure container**


think blue
clean water starts with you!
www.thinkbluemaine.org
South Portland
Water Resource Protection
VIDEO INSPECTION UNIT